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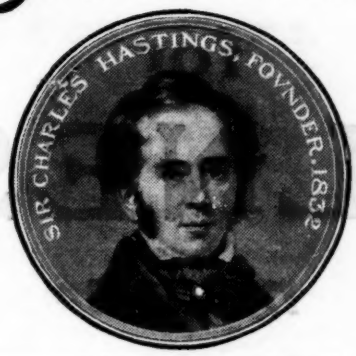

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PROCEEDINGS OF SECTIONS AT THE ANNUAL MEETING, 1923.

SECTION OF OBSTETRICS AND GYNAECOLOGY.

VICTOR BONNEY, M.S., M.D., F.R.C.S., President.

DISCUSSION ON THE TREATMENT OF ACUTE SALPINGITIS.

INTRODUCTORY PAPERS.

I.—ALECK W. BOURNE, B.CH., M.B., F.R.C.S.,
Obstetric Surgeon for Out-patients, St. Mary's Hospital.

In this paper our discussion will be confined to the treatment of those forms of acute suppurative salpingitis which give rise to the signs and symptoms of pelvic peritonitis. It is not intended to refer to so-called catarrhal salpingitis, which does not pronounce itself by the signs of definite peritonitis and never requires more than the simplest medical treatment for its relief.

Clinical Definition of Acute Suppurative Salpingitis.

Before discussing the treatment of the disease in detail it is necessary to define its clinical manifestations. It is essentially an attack of acute suppurating pelvic peritonitis with a background of genital symptoms due to acute suppuration of one or both Fallopian tubes. Thus we find that a patient suffering from acute salpingitis has acute pain, tenderness, and rigidity of the hypogastrium, with the ordinary accompaniments of moderate fever. A little later there is distension of the lower abdomen with constipation, sometimes vomiting, and painful micturition. In addition there are uterine haemorrhage, leucorrhoea, and great tenderness by vaginal examination. No definite swelling can be identified during the first few days on account of the softness of the enlarged tube and the pain of examination. It is essential, however, to diagnose the presence of free pus in the pelvic cavity during these earliest days before a definite tubal swelling has had time to form.

The Aim of Treatment.

The cardinal lesions requiring treatment are: (*a*) suppurative inflammation of the tubes, and later the ovaries; (*b*) suppurative pelvic peritonitis. These two conditions are inseparable and cannot be regarded independently.

The first object, therefore, of any intelligent treatment must be to arrest the acute disease and prevent its extension to the abdominal cavity proper. It is seldom that a general peritonitis arises as a result of acute salpingitis except after full-term labour, when the tube is an abdominal organ; but if the disease is treated efficiently it is possible to cut short the long-drawn-out course of tubal and pelvic suppuration which occurs when treated by expectant methods.

The second object is to prevent the formation of chronic sequelae in the shape of adhesive pelvic peritonitis, interstitial salpingitis, pyosalpinx, etc. Too little attention is paid to this aspect of the disease. It is virtually impossible for a suppurative salpingo-peritonitis to resolve unless operated upon. Chronic thickenings, adhesions, and cold abscesses are the almost inevitable result, producing a chronic semi-invalidism with relapses of acute symptoms. Further, a bilateral salpingitis is certainly followed by sterility.

The third object of treatment is to enable the affected tube to resolve sufficiently to resume its normal function. Suppurative salpingitis, by its denudation of epithelium and formation of intratubal adhesions, in addition to sealing of the abdominal ostium and fixation by intratubal adhesions, ensures the future sterility of the patient, which is a serious matter for a young married woman affected by gonorrhoeal salpingitis soon after marriage. It should be our aim, then, not only to prevent chronic ill health, but, if possible, to give back the reasonable hope of conception.

The Case for Operation.

The employment of expectant and medical methods will usually result in the acute symptoms passing off and the subsidence of any inflammatory mass in the pelvis. The patient "recovers" and is able to get up in about three weeks and resume her ordinary occupations; but she is inevitably sterile thereafter, and the slow development of chronic salpingo-oöphoritis or pyosalpinx is only a matter of time. If acute suppurative salpingitis is capable of resolution as a result of medical treatment, how does the ordinary chronic interstitial salpingitis arise? The commonest operation on the tube is for these chronic forms of inflammation. The great frequency of this disease and of operations for its cure after years of pain, menorrhagia, and sterility, is an indication of the ordinary sequel of the disease in the acute form. It would appear, therefore, that medical methods, although they may suffice to nurse the patient through the acute stages into a convalescence, are insufficient as treatment, in so far as the patient is left with a chronic inflammatory pelvic focus and all its symptoms. It is obvious that something more is necessary. Complete treatment can only be accomplished by surgical means—that is to say, by laparotomy—and proper treatment of the tube.

Time for Operation.

The ideal is to arrest the destructive inflammatory process at the earliest possible moment. As we have seen, the desquamation of the tubal epithelium and the formation of the intratubal adhesions and diverticula and the sealing of the ostium comprise the essential damage from the functional point of view, and it is probable that these processes begin very early in the disease. The chief element in the tube is its ciliated epithelium, for on its integrity depends the function.

It is important, therefore, to operate as soon as possible—in other words, as soon as the disease is diagnosed as a suppurative salpingitis. The sooner the abdomen is opened the easier is it to restore tubal function by arresting the destructive suppurative processes.

The chief objections to operation during the acute stage are (1) that it is usually "unnecessary"; (2) that it may be dangerous in spreading infection. We have already discussed the first objection by suggesting that though medical treatment may succeed in assisting the patient through her acute stage, yet surgery is necessary for the prevention of chronic tubal disease. The second objection used to be urged against operation for acute appendicitis before the fifth day. It is no more valid as applied to salpingitis than to appendicitis, probably less so, as the organisms of acute salpingitis are usually of a less virulent order. It is stated that laparotomy in the acute stage is dangerous inasmuch as it is liable to spread infection into the general abdominal cavity. By an ordinarily careful technique this should be no more likely than in acute appendicitis.

During the last three years I have been able to trace eleven cases of acute suppurative salpingitis operated on within a few days of the first onset of pain. There have been no deaths, and all the cases have done well. I have excluded eleven cases of puerperal salpingitis, which is a much more dangerous disease, and is anatomically and pathologically different from the non-puerperal variety.

From the arguments set forth, contending that medical treatment is very liable to be followed by chronic disease and that the risk of the operation is extremely small, the case for surgical interference appears to be established. Further, our knowledge of the pathological processes going on within the tube serves to indicate that such surgical treatment should be as early as possible.

The Operation.

The abdomen having been opened and the abdominal cavity proper carefully packed off from the pelvic cavity, the tubes are inspected to note their condition. In all true cases of the suppurative disease in the acute phase the tubes are greatly congested and plum-coloured, with oedematous

fimbriae and pus leaking from the abdominal ostium. Plastic lymph adheres in flakes to the peritoneal surface of the tubes and neighbouring viscera, such as the ovaries and uterus. Organized adhesions have not yet had time to form.

Each tube should first be slit up as far as possible along the border opposite to its mesenteric attachment, the pus very gently swabbed away, and the mucous membrane carefully inspected. Should it appear intact to the naked eye, only congested without ulceration or greyish patches of necrosis, the tube should be left *in situ* without any further treatment beyond a few sutures of thin catgut to fix the muco-cutaneous surfaces at any point where there is arterial bleeding. Any cyst in the ovaries should be opened freely to prevent the formation of an ovarian abscess; a drainage tube is placed to the bottom of the pouch of Douglas, and the abdomen is closed, or drainage may be provided through the vagina.

The advantages of laparotomy and salpingostomy are as follows:

(1) A check is given to spreading peritonitis and the formation of adhesions and peritoneal abscesses by opening and draining the pelvis.

(2) The laying open of the tube drains its lumen and immediately offers it the chance of resolution without the risk of further permanent changes caused by a continuation of suppurative inflammation.

The suppurating tube must be regarded as an abscess cavity with an imperfect drainage through the abdominal ostium. So long as the drainage is imperfect the destructive suppurative process will continue as in an ordinary abscess cavity, with the production of necrosis and desquamation, the formation of adhesions within the tube and sealing of the ostium. But salpingostomy will provide complete drainage, and thus allow immediate retrogression of the inflammatory process, for there is no slough to separate, and the function of the tube may thus be restored.

(3) Salpingostomy obviously renders the formation of a pyosalpinx impossible, and permanent thickening of the tubal wall extremely unlikely.

Salpingectomy.—If after laying open the tube the mucous membrane shows grey patches of ulceration and gangrene it is beyond the power of functional recovery and should be removed. The only possible object of preserving the tubes is to maintain their function, and if this appears impossible owing to the extent of their destruction the tubes should be completely removed. By this operation there can be no further salpingitis, and the ovary is saved considerable risk of infection. To leave the tube alone and merely drain the pelvis is to invite the formation of chronic tubal disease and permanent ill health. Further, the convalescence will be longer and more likely to be disturbed by residual abscesses.

Results.

It is only very rarely that it is possible to inspect the distant results of salpingostomy done for the acute form of salpingitis. A case in which this was possible made a great impression on me, and is worth recording to show the complete degree of possible resolution.

The condition operated on was one of acute puerperal salpingitis, a notoriously severe form of the disease, in which the tubes were greatly congested, enlarged, plum-coloured, and were oozing pus. They were treated by salpingostomy. The whole of each tube was slit up as far as the isthmus, and the abdomen drained from above.

About three weeks after the operation the patient died of pneumonia and a partial *post-mortem* examination was made. The tubes were carefully inspected, and were found to have undergone complete resolution. The tube wall was soft and of normal appearance, without any congestion, while the gutter made by the operation was found to be clear of any adhesions and opening freely into the pelvic cavity. Moreover, the plicae of the mucous membrane had entirely regained their ordinary appearance.

Such a tube we know from other experience to be capable of bearing ova to the uterus, and so justifying its preservation. How far it is usual for so complete resolution to follow acute suppurative salpingitis with the crowning success of a subsequent pregnancy it is impossible to say, for I doubt if anybody has yet done sufficient operations of this kind, but cases are on record of pregnancy following salpingostomy of the tube in a chronic state, and it is reasonable to hope that similar treatment of the acute tube sufficiently early, before too great damage of the mucous membrane has occurred, will be followed by similar success.

Even suppose, however, that salpingostomy does fail to produce resolution and a functioning tube, we have done no harm by not removing the tube in the early stages, inasmuch as it cannot lead to a chronic pyosalpinx, and adequate drainage of the pelvis will prevent residual peritubal abscesses.

If, on the other hand, the tube is damaged beyond hope of repair, as by gross ulceration of the mucous membrane, salpingectomy is the only procedure which will preserve the pelvis from future pathological conditions. To leave such cases unoperated upon will ensure the formation of a subsequent pyosalpinx or chronic interstitial salpingitis.

One final word. Many cases of acute salpingitis occur in young women soon after marriage, in whom the certainty of future sterility is a very real tragedy. We are sometimes apt to regard the "recovery" of the patient as the chief if not the only aim of our treatment. Now I claim that our treatment should be designed for further results than "recovery." These (non-puerperal) patients will frequently recover whether the gynaecologist is present or not, but if our treatment is not intelligent and prospective we condemn a young woman to the prospect of certain sterility and frequently to pelvic invalidism. If the tube is treated early, salpingostomy will give her the chance of further childbirth, and if it is already too much damaged, salpingectomy will prevent permanent ill health.

II.—VICTOR BONNEY, M.S., M.D., F.R.C.S.,

Obstetric Surgeon, Middlesex Hospital.

I AGREE entirely with Mr. Bourne's proposal to leave out of discussion puerperal salpingitis, the propriety of immediately operating upon which nobody, I suppose, contests. I wish he had called it "post-abortional salpingitis," for salpingitis, though common after abortion, is rare after full-time delivery, because there is no communication between the tubes and the uterine cavity for some time after labour. Cases diagnosed as puerperal salpingitis are usually examples of thrombo-phlebitis of the leash of veins and lymphatics which accompany the ovarian artery in the upper broad ligament, the tube being stretched sessile over the mass so formed.

I have been for a great many years an advocate for operating on all cases of salpingitis at the earliest possible moment. My opinion on this matter has not been lightly formed, for I was brought up in that older school of thought which denounced early operation, and it is always difficult to break away from the teaching impressed by one's seniors at an age when the mind is mouldable. Indeed I know some men who have never recovered from their teachers.

In the nineties I well remember how every female medical ward at Middlesex Hospital perennially contained two or three cases of "perimetritis" undergoing "treatment." Each patient stopped there for weeks with a see-saw temperature chart, and a poultice on her abdomen. I recall that some died, but the majority eventually got well after a discharge of pus per rectum, and after weeks of suffering resumed their normal mode of life.

Later on it became the practice, after the first fury of the attack had spent itself, to transfer these cases to the gynaecological ward and to operate on them. The operation was always severe, sometimes most formidable, and the appendages the surgeon dislodged from the pelvis were a couple of swollen, ragged, pus-exuding masses bearing no likeness to the normal ovaries and tubes as fashioned by Nature's beautiful handiwork. Both appendages were then habitually removed, and, indeed, in very few of the cases could the surgeon have done otherwise. Drainage had often to be maintained for several weeks, and faecal fistulae were common. The mortality attached to these cases of delayed operation was high, and it remains high, for unfortunately patients with neglected salpingitis are still all too frequently presented to us.

More than occasionally, too, I saw cases where opening the abdomen, after days or weeks of suffering, revealed a

state of affairs not due to salpingitis at all, but to appendicitis, tubal gestation, infection of a pre-existent tumour, etc.—conditions which manifestly should have been treated by immediate operation.

Dispassionately reviewing the experiences I have related to you I came to the conclusion that the treatment of acute salpingitis as taught and exemplified to me was all wrong, for the medical treatment was not treatment at all and the surgical treatment had obviously been postponed till too late. I therefore began to operate on every case as early as possible—on the first day if I got the chance.

I had been taught that early operation was dangerous, and if this was true it would be better in many cases not to operate at all—the very bankruptcy of surgery. But it is not true. This is a most important point and must be settled at the outset.

I have operated on a large number of cases of early salpingitis during the last twenty years, and the only case I have lost died of delayed chloroform poisoning. Those opponents of early operation who maintain that it is dangerous speak without experience. I asked one of them who was thus denouncing the practice whether he had ever operated on an early case. He replied, "No; I consider it criminal." Now, had he told me that he had so operated but had given it up on account of his bad results I should have been impressed, but as it was I merely noted another example of a good natural mind, hopelessly tethered, tied, and bound in the net spread by his teachers.

It has been suggested that patients operated on early have frequently to be reopened on account of collections of pus in the ovaries or pelvis. I can only say that there is no substance in such a suggestion; I have never had to do it.

Writing off, then, the fable that early operation is dangerous, we can proceed to consider a most important question: Is an inflamed tube capable of recovering its function, and, if so, is the likelihood of such recovery considerable or small? For if the likelihood of such recovery is considerable then the tubes should be saved if possible, and it is worth incurring a risk to save them; whereas if the likelihood is small, and still more if it does not exist, then the safest route to the patient's recovery must be adopted, irrespective of what happens to the tubes.

Evidence as to the subsequent value of tubes that have been inflamed is badly wanted, and I hope that this discussion will result in a certain amount of such evidence becoming available. It is no use reciting the case of Mrs. Brown, who was treated non-operatively for salpingitis five years ago and now is six months pregnant, for there is no certainty that both Mrs. Brown's tubes were inflamed. What we want is a record of cases where the abdomen was opened, both tubes were found inflamed, one or both were conserved, and the patient subsequently conceived; and at present early operation with conservation of the tubes has not been practised sufficiently long for any considerable number of such cases in the practice of one surgeon to become available for evidence. For this reason single cases of that kind should be published at once so that we may the quicker obtain the desired body of evidence.

While not denying that an inflamed tube may recover so entirely as to allow of pregnancy occurring, I am at present of opinion that such complete recovery is rare. This opinion is founded on pathological and clinical considerations, and my experience of abdominal section on patients who years before had salpingitis. Of direct evidence I have only one case, and that not conclusive. I operated on a patient with only one tube and that inflamed (the other had been previously removed), and I conserved the tube. A year or two afterwards I reopened her on account of an inflammatory ovarian cyst, and found the tube apparently recovered, though I did not inflate it. She had not conceived, though living with her husband, but, on the other hand, her one and only ovary was cystic.

Since it has been my practice until the last few years always to remove the early inflamed tubes, I cannot draw on the bulk of my operations for early salpingitis for evidence in this connexion. The number of cases in which I have conserved the tubes and drained is relatively small, and still smaller are those in which I have slit the tube.

My experience of conservation with drainage has not been particularly encouraging. All my cases recovered, but one very nearly died of paralytic ileus, and none of them have conceived since the operation, so far as I know. Twice I have subsequently had to reoperate on account of chronic disease of the appendages.

The operation of slitting, I must say, appeals to me as being much more likely to lead to complete restoration of the tubal function, but one must remember that though it makes future closing of the abdominal ostium less likely it can have but little effect on closure towards the other end of the tube, and this is really the more serious of the two events.

Should the evidence, when sufficient is accumulated, show that complete recovery of an inflamed tube is not uncommon, then the acutely inflamed tube must be conserved whenever possible. Conservation may be practised by (1) not operating at all, or (2) conservative operation, either by simple drainage of the pelvis or by slitting and drainage. Since it is very rare in delayed operations to find the tubes in a condition suitable for conservation, the choice would be between not operating at all and early operation with simple drainage or slitting and drainage. Of the two I have not the slightest hesitation in deciding for early operation. Early operation, as I have stated, is exceedingly safe when the tubes are removed, and evidence seems to show that the risk is at all events not greatly increased by conserving the tubes.

Early operation has the great advantage over expectant treatment that the ovaries can always be conserved, whereas by withholding the surgeon's hand, though a proportion of the patients eventually appear to recover their health entirely, in the remainder the ovaries become hopelessly disorganized by suppuration or cyst formation, and eventually the unfortunate woman has to undergo double salpingo-oöphorectomy. These delayed operations are, as I have said, at all times serious, and often most formidable and difficult, and I never perform one myself or watch one being performed without regretfully remembering that had the disease been attacked surgically at its incidence a very simple and safe operation would have sufficed to cure the patient.

A pyosalpinx or an ovarian abscess is, in my opinion, a disgrace to the surgeon if the delay which allowed of such forming can be laid to his door. The parallel with appendicitis is a fair one. There the surgeon seeks to operate before abscess formation because the operation is safer than after an abscess has formed. In salpingitis, also, the operation is safer before abscess formation; but in salpingitis there is additional reason for early operation. No one wants to conserve an appendix, healthy or unhealthy; but the ovary is a different matter, and now evidence is suggesting that the tubes may be saved if operated on early enough.

Natural cure of a pyosalpinx or an ovarian or pelvic abscess is usually effected by adhesion to the pelvic colon with discharge of the pus into the bowel. Relief, however, is not immediate as a rule, for there are generally two or more collections of pus, and, moreover, the abscess cavity at once becomes analogous to a blind internal fistula with faecal infection of its wall and contents, so that prolonged suppuration with intermittent discharges of pus per anum is not uncommon. In delayed operations the surgeon frequently has to dislodge a tube or ovary which has already perforated or is on the point of perforating into the bowel, with the result that a faecal fistula up the drainage track develops within the first few days. This is another important objection to delayed operation and a valid reason in favour of surgical interference at the earliest possible moment. Finally, as a reason for immediate operation, there is always the possibility of faulty diagnosis. There are cases of pelvic appendicitis, diverticulitis, and also early extrauterine gestation, which it is impossible at the outset to distinguish from salpingitis.

But supposing that the evidence—when sufficient is accumulated—shows that inflamed tubes very rarely remain patent, how shall we stand then? A few years ago my answer would have been simple: The tubes, being practically valueless, need not be considered and should be removed as early as possible, since by early operation we save the ovaries from secondary infection and the patient

fimbriae and pus leaking from the abdominal ostium. Plastic lymph adheres in flakes to the peritoneal surface of the tubes and neighbouring viscera, such as the ovaries and uterus. Organized adhesions have not yet had time to form.

Each tube should first be slit up as far as possible along the border opposite to its mesenteric attachment, the pus very gently swabbed away, and the mucous membrane carefully inspected. Should it appear intact to the naked eye, only congested without ulceration or greyish patches of necrosis, the tube should be left *in situ* without any further treatment beyond a few sutures of thin catgut to fix the muco-cutaneous surfaces at any point where there is arterial bleeding. Any cyst in the ovaries should be opened freely to prevent the formation of an ovarian abscess; a drainage tube is placed to the bottom of the pouch of Douglas, and the abdomen is closed, or drainage may be provided through the vagina.

The advantages of laparotomy and salpingostomy are as follows:

(1) A check is given to spreading peritonitis and the formation of adhesions and peritoneal abscesses by opening and draining the pelvis.

(2) The laying open of the tube drains its lumen and immediately offers it the chance of resolution without the risk of further permanent changes caused by a continuation of suppurative inflammation.

The suppurating tube must be regarded as an abscess cavity with an imperfect drainage through the abdominal ostium. So long as the drainage is imperfect the destructive suppurative process will continue as in an ordinary abscess cavity, with the production of necrosis and desquamation, the formation of adhesions within the tube and sealing of the ostium. But salpingostomy will provide complete drainage, and thus allow immediate retrogression of the inflammatory process, for there is no slough to separate, and the function of the tube may thus be restored.

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I have operated on a large number of cases of early salpingitis during the last twenty years, and the only case I have lost died of delayed chloroform poisoning. Those opponents of early operation who maintain that it is dangerous speak without experience. I asked one of them who was thus denouncing the practice whether he had ever operated on an early case. He replied, "No; I consider it criminal." Now, had he told me that he had so operated but had given it up on account of his bad results I should have been impressed, but as it was I merely noted another example of a good natural mind, hopelessly tethered, tied, and bound in the net spread by his teachers.

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Evidence as to the subsequent value of tubes that have been inflamed is badly wanted, and I hope that this discussion will result in a certain amount of such evidence becoming available. It is no use reciting the case of Mrs. Brown, who was treated non-operatively for salpingitis five years ago and now is six months pregnant, for there is no certainty that both Mrs. Brown's tubes were inflamed. What we want is a record of cases where the abdomen was opened, both tubes were found inflamed, one or both were conserved, and the patient subsequently conceived; and at present early operation with conservation of the tubes has not been practised sufficiently long for any considerable number of such cases in the practice of one surgeon to become available for evidence. For this reason single cases of that kind should be published at once so that we may the quicker obtain the desired body of evidence.

While not denying that an inflamed tube may recover so entirely as to allow of pregnancy occurring, I am at present of opinion that such complete recovery is rare. This opinion is founded on pathological and clinical considerations, and my experience of abdominal section on patients who years before had salpingitis. Of direct evidence I have only one case, and that not conclusive. I operated on a patient with only one tube and that inflamed (the other had been previously removed), and I conserved the tube. A year or two afterwards I reopened her on account of an inflammatory ovarian cyst, and found the tube apparently recovered, though I did not inflate it. She had not conceived, though living with her husband, but, on the other hand, her one and only ovary was cystic.

Since it has been my practice until the last few years always to remove the early inflamed tubes, I cannot draw on the bulk of my operations for early salpingitis for evidence in this connexion. The number of cases in which I have conserved the tubes and drained is relatively small, and still smaller are those in which I have slit the tube.

My experience of conservation with drainage has not been particularly encouraging. All my cases recovered, but one very nearly died of paralytic ileus, and none of them have conceived since the operation, so far as I know. Twice I have subsequently had to reoperate on account of chronic disease of the appendages.

The operation of slitting, I must say, appeals to me as being much more likely to lead to complete restoration of the tubal function, but one must remember that though it makes future closing of the abdominal ostium less likely it can have but little effect on closure towards the other end of the tube, and this is really the more serious of the two events.

Should the evidence, when sufficient is accumulated, show that complete recovery of an inflamed tube is not uncommon, then the acutely inflamed tube must be conserved whenever possible. Conservation may be practised by (1) not operating at all, or (2) conservative operation, either by simple drainage of the pelvis or by slitting and drainage. Since it is very rare in delayed operations to find the tubes in a condition suitable for conservation, the choice would be between not operating at all and early operation with simple drainage or slitting and drainage. Of the two I have not the slightest hesitation in deciding for early operation. Early operation, as I have stated, is exceedingly safe when the tubes are removed, and evidence seems to show that the risk is at all events not greatly increased by conserving the tubes.

Early operation has the great advantage over expectant treatment that the ovaries can always be conserved, whereas by withholding the surgeon's hand, though a proportion of the patients eventually appear to recover their health entirely, in the remainder the ovaries become hopelessly disorganized by suppuration or cyst formation, and eventually the unfortunate woman has to undergo double salpingo-oöphorectomy. These delayed operations are, as I have said, at all times serious, and often most formidable and difficult, and I never perform one myself or watch one being performed without regretfully remembering that had the disease been attacked surgically at its incidence a very simple and safe operation would have sufficed to cure the patient.

A pyosalpinx or an ovarian abscess is, in my opinion, a disgrace to the surgeon if the delay which allowed of such forming can be laid to his door. The parallel with appendicitis is a fair one. There the surgeon seeks to operate before abscess formation because the operation is safer than after an abscess has formed. In salpingitis, also, the operation is safer before abscess formation; but in salpingitis there is additional reason for early operation. No one wants to conserve an appendix, healthy or unhealthy; but the ovary is a different matter, and now evidence is suggesting that the tubes may be saved if operated on early enough.

Natural cure of a pyosalpinx or an ovarian or pelvic abscess is usually effected by adhesion to the pelvic colon with discharge of the pus into the bowel. Relief, however, is not immediate as a rule, for there are generally two or more collections of pus, and, moreover, the abscess cavity at once becomes analogous to a blind internal fistula with faecal infection of its wall and contents, so that prolonged suppuration with intermittent discharges of pus per anum is not uncommon. In delayed operations the surgeon frequently has to dislodge a tube or ovary which has already perforated or is on the point of perforating into the bowel, with the result that a faecal fistula up the drainage track develops within the first few days. This is another important objection to delayed operation and a valid reason in favour of surgical interference at the earliest possible moment. Finally, as a reason for immediate operation, there is always the possibility of faulty diagnosis. There are cases of pelvic appendicitis, diverticulitis, and also early extrauterine gestation, which it is impossible at the outset to distinguish from salpingitis.

But supposing that the evidence—when sufficient is accumulated—shows that inflamed tubes very rarely remain patent, how shall we stand then? A few years ago my answer would have been simple: The tubes, being practically valueless, need not be considered and should be removed as early as possible, since by early operation we save the ovaries from secondary infection and the patient

from prolonged illness. This is the opinion I maintained and the practice I adopted until quite recently. The increasing vogue of operations designed to restore the function of closed tubes, and latter-day methods of diagnosing such closure by inflation and so forth, make the question more difficult to answer.

What we need is evidence of the value of tubes subsequent to operative reopening, and here again I am hoping that such will be forthcoming as a result of this discussion. Speaking for myself, I would say that I have performed a considerable number of these reparative operations during the last fifteen years, and the number of successes I have had—that is, the number of times pregnancy has occurred subsequent to the operation—is small. Cases with simple closure of the abdominal ostium without tubal distension are, I believe, the only ones likely to yield a fair percentage of successes. When the tube is distended both ends are closed, and no operative technique that I know of offers much chance, I think, of permanently restoring communication with the uterus—not even reimplantation; and what I have said applies also to cases where the closure affects only the uterine end as proved by inflation.

However, I am most willing—nay, most anxious—to be converted from this pessimistic view by more favourable evidence, and I hope some of the speakers will be able to give it. If it be shown, now or in the future, that tubal function lost by inflammation can be restored by surgical means in a fair percentage of patients, then the case for conservation of the tubes at the primary operation is strengthened, for the surgeon, having failed in his first endeavour to restore the reproductive organs to their normal state, would still have another bolt to shoot. Conversely, if the truth turns out to be that recovery by Nature or operative repair is a feeble hope, we shall have regretfully to fall back on removal of the tubes at the earliest possible moment as the least disastrous way out of a situation laden with disasters.

III.—Professor W. BLAIR BELL, B.S., M.D.,

Gynaecological Surgeon, Royal Infirmary, Liverpool.

I CONGRATULATE Mr. Bourne on his paper, and on his attempt to deal with so disabling a condition as acute salpingitis by conservative methods. It must be conceded by all that such endeavours are almost beyond criticism, and that they are worthy of emulation. I have often insisted that in gynaecological surgery the limit has long ago been reached in regard to eradication, and that the perfection of conservative procedures alone remains as an ideal of the scientific surgeon.

The method of treatment advocated by Mr. Bourne is the same as that described by Holden[1] two years ago for "chronic adnexal disease," except in regard to minor details, such as the suture of one lip of the incision to the round ligament, which was suggested by Holden in order that intestinal adhesions may be avoided. It is true that Holden practises the operation for chronic lesions, whereas Mr. Bourne employs this procedure in acute infections.

The after-histories of Holden's cases are not encouraging, for reasons that I will explain—reasons which, I think, affect, but perhaps in a less definite way, cases treated in the acute stage.

Mr. Bourne, like Holden, has not made a clear distinction between the elective lesions—if this term may be used—of the gonococcus and the streptococcus respectively; nor is the relative virulence of these organisms emphasized, except in so far as Mr. Bourne has alluded to what he calls "puerperal salpingitis" as being more serious than the non-puerperal variety. The former is, of course, usually associated with streptococcal infection, the latter with gonorrhoeal. These two infections overshadow all other infections, and presumably it is to these that Mr. Bourne refers, because such treatment as that recommended would not be applied to acute tuberculous salpingitis.

I believe that recognition of the differences in the circumstances of infection, in the essential pathology, in the aim of treatment, and in the time for operation leads to the complete separation of the two conditions—gonorrhoeal and streptococcal salpingitis. There is, I have been glad to notice, evidence of hesitation on the part of Mr. Bourne to put his cases of "puerperal salpingitis" alongside those of "non-puerperal salpingitis." Mr. Bourne is learning by experience what others have already learned—namely, that extensive interference in acute streptococcal lesions is so dangerous, and the mortality is so high, that it is to be avoided rather than advocated.

I believe and teach: (1) That whereas the gonococcus remains localized for a long time in the mucosa of the tube, and in time may lead to the destruction of it with the formation of granulation tissue; the streptococcus, on the other hand, has a faculty for passing rapidly through the lining membrane, without permanently injuring it in a majority of cases, and reaching the lymphatics. In consequence the tube often recovers entirely or to such an extent that a salpingostomy is not required until the acute stage has long subsided. (2) That operation during the acute stage or even subacute stage of streptococcal infection is dangerous. In order to learn when operation in such cases is safe, I myself employ what I call the "chronicity test"—namely, the observation of febrile reaction or immunity after repeated examination. Any rise of temperature in such circumstances indicates that operation should be postponed. Leucocytosis, I think, is not always a sufficiently definite indication. I would remind Mr. Bourne that the streptococcus remains alive and active in the pelvic organs for many months.

In acute salpingitis in which there is a febrile reaction, and in which the presence of pus in the pelvis demands interference, I limit operative procedures to posterior colpotomy. I would therefore—as I think Mr. Bourne also shows an inclination to do—rule out the operation under the discussion as either unnecessary or too dangerous in the presence of an active streptococcal infection.

With regard to pure gonococcal infection the case is different; there is little danger to life, and in this condition I think the operation may be tried, although I have no great confidence, I am sorry to say, in approximately satisfactory results.

Undoubtedly some mild cases of gonorrhoeal salpingitis recover spontaneously. In most cases it does not appear to me likely, for the reasons given, that a cure will be effected by the operation in question, since the interstitial portion of the tube will generally be occluded. Moreover, I doubt whether incision of the tube will lead to the disappearance of the organisms located in the mucosa which is a site of election.

Mr. Bourne speaks of performing salpingectomy to save the ovary from infection. This requires great judgement, for if a tube be enlarged and adherent it is extremely difficult to remove it without damaging the blood supply to the ovary. In such circumstances, when pregnancy is impossible, I perform ovarian grafting.

Mr. Bourne's paper is most stimulating, and I think everyone must wish that success along these lines were more probable than it appears to me to be.

IV.—LEONARD PHILLIPS, M.S., M.B., F.R.C.S.,

Obstetric Tutor, St. Mary's Hospital; Obstetric Surgeon to Out-patients, Queen Charlotte's Lying-in Hospital.

The Conceptional Value of Reconstructed Tubes.

THE following contribution is in support of the view that the tubes should be conserved in acute salpingitis. Whether this is secured by non-interference and medical treatment, or whether by incision and drainage of the tubes, the essential consideration is that the tubes should not be sacrificed. Although they are damaged by acute salpingitis they still have a real conceptional value. The closed ostial end can be reopened, the kinked and stenosed lumen recanalized, and the patency of the tubes once more established. In the last two years I have performed twenty-five laparotomies on women who had suffered from salpingitis in the past. In every case lesions indicating past salpingitis, and sufficient to cause sterility, were discovered. Reconstructive operations were performed in 20 cases, and

[1] Holden, F. C.: *Trans. Amer. Gynecol. Soc.*, 1921, xlvi, 276.

so far 5 of these have become pregnant—that is, 25 per cent. Most of these cases presented few or no physical signs, and their chief complaint was sterility. It is only a small series, but some interesting facts emerge from a closer study.

Choice of Cases.

In choosing cases for operation the following factors were taken into consideration as suggesting the likelihood of tubal occlusion or obstruction following salpingitis:

1. The failure of other methods of treating the sterility, including dilatation, alone or with insertion of a stem, incision of the cervix, or curettage. Most of the patients in this series had already been subjected to one of these operations without conception resulting.

2. The occurrence of an early miscarriage followed by sterility lasting more than eighteen months, especially if uterine operations, such as curettage, were without effect after the miscarriage.

3. The occurrence of a definite gonococcal cervicitis in the past. Some of the cases had been treated for gonococcal cervicitis, proved by positive cultures, and some gave a history suggesting an attack of salpingo-oöphoritis in the past. A history of past attacks of appendicitis is also not without significance.

4. In some of the cases there was present an unsplit virgin cervix with an issuing chronic muco-purulent discharge, which though giving negative cultures was associated with a history of gonorrhœa in the husband.

5. In about half the cases dyspareunia was associated with definite tenderness in one or both fornices. This is a significant and valuable sign in cases where no lesion of the tubes is palpable on bimanual examination.

Details of Findings.

The following conditions were found:

1. Tubes of almost normal length and thickness, mobile, slightly convoluted, and with normal lustre, but with closed and club-like ostial ends, occasionally showing a central dimple. On opening the tubes a little clear sterile fluid can usually be expressed. The club-ended tubes are almost invariably the result of gonococcal infection, are usually bilateral, free from adhesions, and when the fimbrial end is reopened can be easily probed to the uterine extremity. Even under anaesthesia, before the abdomen is opened, it is impossible as a rule to detect any abnormality in the pelvis in these cases.

2. Tubes of normal length and thickness, but adherent at the fimbrial ends and along their lateral aspects to the back of the broad ligament or the sides and floor of the pelvis. These cases are usually the result of streptococcal or mixed infections following abortions, and intrauterine operations, especially stem insertions of more than forty-eight hours' duration. Occasionally in these cases there are so many adhesions that the pelvis is roofed over and it is impossible to reach the tubes and ovaries without risk of damage to the intestines or the lighting up of a dangerous streptococcal infection. Moreover, unlike the mobile closed gonococcal tubes they are frequently adherent to the ovary at the ostial ends, a false fibrous capsule of condensed lymph covering both the ovary and the end of the tube in such a way as not only to occlude the tube but also to render ovulation impossible. In such cases the ovary can be shelled out of its fibrous bed quite easily, and given a new lease of procreative life.

3. Tubes open at the ostial ends but kinked, stenosed, or obstructed at one or more points, so that the tube cannot be threaded throughout its entire length over a fine probe or blunt-ended needle. This most often occurs at the point where the tube curves backwards and inwards towards the middle line almost midway between ostium and uterus. They are usually the result of mild mixed infections, not sufficiently severe or prolonged to close the tubes, but serious enough to produce a local stenosis and fibrosis at the point where narrowing of the bent canal usually occurs.

4. Tuberculous affections of the tubes occurred in 5 of the 25 cases, or 20 per cent.

A most striking feature in this series was the clinical paucity of physical signs in association with bilateral pathological lesions of the tubes and ovaries sufficiently serious to produce sterility.

Operative Technique.

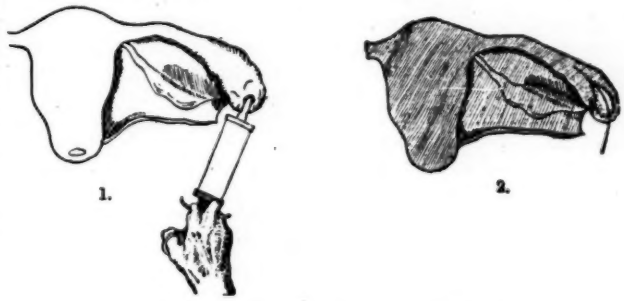
The following reconstructive operations on the tubes were performed: (*a*) salpingostomy; (*b*) partial salpingectomy; (*c*) resection and anastomosis; (*d*) incision and re-suture after canalization.

(a) Salpingostomy.

The cervical canal is first dilated slowly up to No. 8 and a sterile swab placed against the cervix. The abdomen is then opened in the middle line below the umbilicus, a quadrilateral self-retaining retractor inserted, the intestines packed away from the pelvis, and the edges of the wound clipped to sterile protective.

If a mobile club-ended tube be found it is carefully drawn up, punctured at the dimple or extremity of the club, milked of its contents, and then blown up with air (see Diagram I), using an ordinary metal syringe similar to that employed in hospital casualty departments for removing wax from the ears.

This expands the tube and exposes any kinks or stenoses if existent. A long fine Wassermann needle from which the sharp point has been clipped off is then passed down to the cornual end of the tube, the latter being threaded over the needle and care being taken not to make a false passage. As a rule it passes easily. A 20 c.cm. Record syringe filled with flavine, 1 in 1,000, is then attached to the end of the needle projecting from the ostium, and this antiseptic, non-toxic, and non-irritant solution is gradually forced into the uterus. Consequently when the plug against the cervix is removed it is found stained orange by flavine, proving the patency of tube and uterus. Finally, the free margin of the tube at the ostial end is incised for about 1½ inches and the cut edges oversewn with 00 catgut on



I. Salpingostomy on Club-ended Tubes.

1. After puncturing the club end of the tube the lumen is distended with air forced into the tube by a metal ear syringe; any kinks or stenoses are thus exposed.

2. After the patency of the lumen has been tested by threading the tube over a fine blunt-ended needle, the dorsal surface of the ostial end is slit up for 1½ inches and the cut edges oversewn with a continuous catgut buttonhole stitch, so as to leave an everted mucous membrane and a patent oval ostium. A strand of No. 4 catgut can be left in the lumen.

very fine needles, using a continuous buttonhole stitch, taking care to evert the mucous membrane and not to pucker up the new opening, but to secure arrest of bleeding from the oversewn edges. (See Diagram I, No. 2.) Then one or more strands of No. 4 catgut can be passed for a short distance into the tube lumen, threaded on a needle, the latter being pushed inwards, blunt end first, so as to release the catgut and leave it in the tube lumen. The other end can be left free or given a *point d'appui* by running it through the edge of the ovary or adjacent broad ligament.

Finally, when both tubes have been reconstructed the round ligaments, and if necessary the ovarian ligaments, are shortened, leaving tubes and ovaries suspended from the back of the broad ligament in a position less favourable to the development of adhesions. After canalizing the second tube, 1/2 per cent. violet-green can be syringed through, so that the patency of both canals can be demonstrated by the orange and violet on the cervical swab.

On one occasion the following slight modification was made. After slitting up the dorsal aspect of the ostial end of one tube for 1½ inches, the free edge was sewn to the ovary, so as to enclose a ripening follicle. On the other side a piece of ovary was partially detached and left in the tube lumen as an autogenous graft. This patient has not yet reported herself to be pregnant.

It is not necessary to drain cases of gonococcal origin, but streptococcal cases, especially if many adhesions have been separated, are best drained for twenty-four or forty-eight hours by a strip of iodoform gauze running from the bottom of Douglas's pouch into the vagina.

In some mild streptococcal or mixed infections, when the tube is separated from its adhesion, it is found that the fimbriae are rawed and bleeding but still visible, or else are able to be everted by pressure. In these cases it is wise to ligature all bleeding points with fine catgut and to pass one or more thick strands of catgut through the ostium into the tube, but this is not essential in gonococcal cases with club-ended tubes. If the fimbriae can be preserved there is a better chance of subsequent conception, but preservation of the fimbriae is not essential to success, as conception has been recorded after total salpingectomy, while in this series three of the successful cases were salpingostomies in closed tubes without fimbriae.

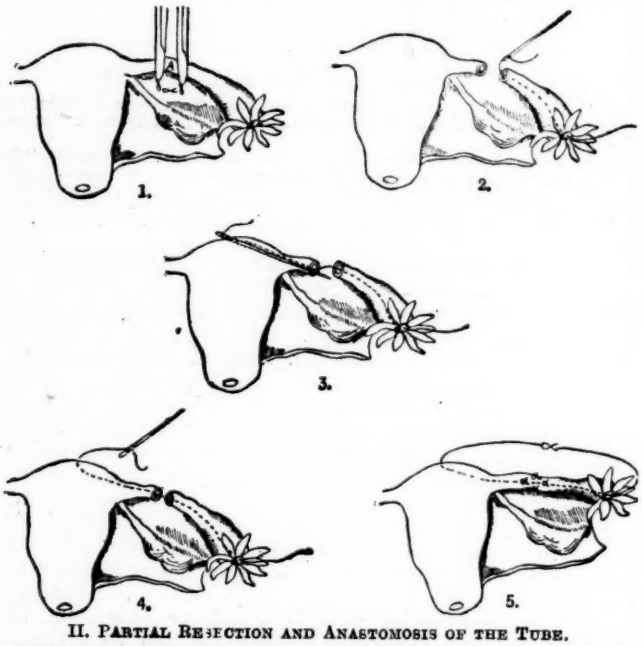
(*b*) *Partial Salpingectomy.*

If the ostial end of the tube is so torn or disorganized that it cannot be utilized, it can be removed and a new opening made at the free end of the remaining portion of the tube, the details of technique being similar to those already described. If much tube is sacrificed it is difficult to make a permanent opening of any size in the muscular and narrow part of the tube, and the prognosis in these cases is less favourable than in cases where the fimbriae are preserved or widely patent salpingostomies are performed. It is wiser in these cases to leave one or more strands of catgut in the tube lumen.

(*c*) *Resection and Anastomosis.*

If on distending the tube with air, or threading it over a needle, a definite obstruction is encountered, the affected part of the tube can be excised and the cut ends reanastomosed.

In performing this delicate operation the mesentery in relation to the obstructed part of the tube is tied and the affected piece of the tube excised. (Diagram II, No. 1.) A fine long needle threaded with thick catgut is passed through the two portions of the tube into the uterus and

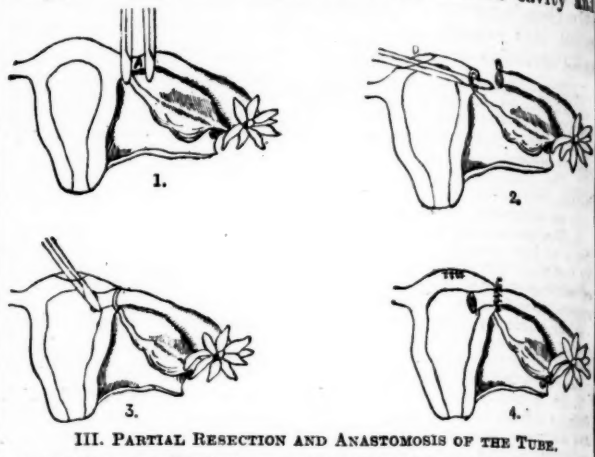


II. PARTIAL RESECTION AND ANASTOMOSIS OF THE TUBE.

1. The diseased or stenosed portion of the tube (A) is removed, the mesentery in relation to this area having just been tied off.
2. A strand of thick catgut is run through the tube as shown in the diagram.
3 and 4. The catgut is then run into the uterine cavity and out of the fundus as shown. The two ends of the catgut are tied together. 5. Then the cut ends of the tube are united by fine interrupted catgut stitches.

out through the fundus, drawing the catgut after it, the catgut at the needle end being tied to the catgut at the free end, entering the ostium of the tube. (Diagram II, Nos. 2, 3, 4, and 5.) The severed tube ends, connected now by the strand of catgut in the tube lumen, are united by a few interrupted very fine catgut sutures passed on small curved needles.

In one case (see Diagram III) with obstruction at the isthmus, the tube immediately adjacent to the uterine cornua was excised. (Diagram III, No. 1.) The proximal cut end of the tube was then drawn into a small artificially bored hole in the region of the cornua. (Diagram III, Nos. 2 and 3.) This was accomplished by making a small incision in the fundus uteri, passing a curved Spencer Wells forceps through this incision into the uterine cavity and



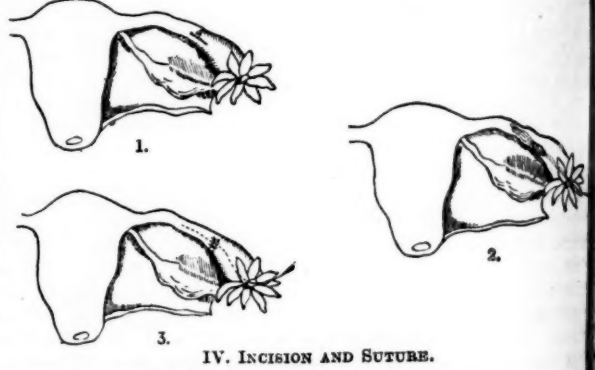
III. PARTIAL RESECTION AND ANASTOMOSIS OF THE TUBE.

1. The diagrams illustrate a method of partial resection and repair of the tube when the damage or disease is at the cornual end. In the above diagram the region A is excised.
2. A small incision is made in the fundus uteri at D, and a Spencer Wells forceps passed through it, so as to emerge at the cornua and seize the cut end of the tube (B).
3. The tube is drawn through the uterine wall.
4. The incision in the fundus is closed and the tube fixed by interrupted fine catgut sutures at C.

out through the artificially bored hole, then seizing the free cut end of the tube and drawing it into the uterus, maintaining the tube in position by a few fine interrupted catgut sutures at the point where it first entered the uterine wall. (Diagram III, No. 4.) In cases of plastic operations on the cornual end of the tube there is usually considerable tension at the point where the tube is sewn into the uterus, and possibly the sutures may cut out after the abdomen is closed.

(*d*) *Incision and Suture.*

In some cases, rather than excise a portion of tube, the stenosed region can be incised longitudinally and sewn up transversely—that is, across the line of the tube. To avoid recurrence of stenosis a piece of catgut can be left in the lumen of the tube by passing a threaded needle, eye fore-



IV. INCISION AND SUTURE.

1. The tube is incised at A over the area of stenosis.
2. A threaded needle is passed, eye foremost, beyond the stenosed region.
3. The incision is sewn up in the opposite direction—that is, at right angles to the line of the tube. The needle is withdrawn so as to leave a strand of catgut in the lumen, traversing the formerly stenosed portion.

most, down the tube and beyond the incised region, while drawing the needle and leaving the catgut *in situ*. (See Diagram IV, Nos. 1, 2, and 3.)

Results.

Twenty-five cases were subjected to laparotomy and reconstructive operations were performed in 20 cases. Of the 20 cases in which a working set of reproductive organs was left, 5 pregnancies have occurred—that is, 25 per cent.

the cases. Except in one case no operation was performed more than two years ago. Three successes were in cases of bilateral salpingostomy, for closed club-ended tubes—one in a case of bilateral resection and anastomosis, and one in a case of bilateral incision and suture after separation of adhesions with resection of one ovary. No successes have so far followed in cases of partial salpingectomy and in operations performed at the uterine end of the tube.

Laparotomy in Sterility: The Place of the Operation.

Are we justified in advising laparotomy in cases such as these, where the only complaint is sterility? It is a question upon which diverse opinions are held. Against the operation it can be argued:

1. That all abdominal operations are a risk to life. No matter how capable the surgeon, he is extremely fortunate if he is able to perform 100 operations without mortality, for pulmonary embolism, which we are as yet unable to prevent, occurs in 1 per cent. of cases.
2. The reopened tubes may close again or adhesions may occlude them.
3. The lining of the tubes may be unhealthy. Though patency may be restored, the inflammatory process which originally sealed them may have destroyed or unfavourably modified the mucous lining with its delicate cilia and necessary secretion.
4. Cases of extrauterine pregnancy have been reported after salpingostomies.
5. It is a tradition of surgery that operations are undertaken to save life or relieve suffering, and as a rule neither justification can be argued in these cases. In other words, not only is the woman incurring a risk, both immediate and remote, but fertility cannot be promised as a result of the operation.

On the other hand it is only fair to remember:

1. That while such an operation is not performed to save life or as a rule to relieve suffering, it may actually be the means of creating a new life; and that when symptoms such as pain are present they are frequently relieved by the operation.
2. The successful cases are surgical triumphs in which intrauterine operations, so often repeated and varied, are doomed to failure.
3. Fertility cannot be promised, neither can it be ensured, by any other method of treatment, but laparotomy does at least allow inspection of the tubes and ovaries, and possibly correction of the bar to fertility. When the abdomen is closed it is at least established that everything possible has been done to favour pregnancy, and probably the chances have been improved. It is a question of balancing the risks of operation against the improved chances of conception. The correct attitude is to explain this to the patient, to show her both sides of the picture and let her decide, an attitude adopted in all the cases in this series. To some women a child means little, to others it means so much, and such women will sometimes ask for operation knowing all its risks and even against advice, if they are satisfied that it improves their chances of conception and ensures that everything possible has been done.

DISCUSSION.

Dr. CARLTON OLDFIELD (Leeds) said that everyone must have been interested in Mr. Bourne's paper. He personally was much attracted by his suggestions: they were idealistic, aiming not only at the saving of life, but the complete restoration of the patients' functions. He personally did not regard delayed operation on the tubes as very dangerous. It seemed to him that in urging early operation the important question was, Could a case of pregnancy following upon operation be produced? Mr. Bourne could not show a case, neither could Mr. Bonney. He had investigated seventeen cases of his own, in which one definitely inflamed tube had been left behind; there was not a single case of pregnancy in the lot. In another series of thirty cases, where simple posterior colpotomy had been performed, there was one case where subsequent pregnancy occurred; but, of course, in these cases the condition of the tubes was not known. Thus, in forty-seven cases there was only one subsequent pregnancy. He saw very few cases of salpingitis before the formation of a tumour. He recalled one case, however, in which he had performed salpingostomy on account of excessive loss and sterility, in which at operation he had found a great mass of adhesions which bled very freely. This patient two years later had an ectopic pregnancy with pelvic haematocele on the left side, and following that again she had two healthy living children. His conclusions were that he would try Mr. Bourne's operation, but he was not very hopeful of the results. He thought they would rarely see their cases as early as the stage described in the paper. He was not entirely convinced of the safety of operation in the acute stage. He did not think that they could justly claim that slitting up the tubes would secure resolution. Drainage by tube would itself probably leave severe adhesions. Again, a certain number of patients would get ectopic pregnancy, more, probably, than would do so if the cases were left alone. The one advantage he could see of early operation was that an inflamed appendix might occasionally be found to be causing all the trouble. Possibly, too, if only one tube were diseased early operation might prevent the other tube becoming involved. His experience of the later cases was that, except in tuberculous cases, faecal fistulae were very rare. Certainly most patients got well after simple colpotomy. He would certainly try earlier operation, but he was not at all sanguine as to the results.

Dr. JOHN CAMPBELL (Belfast) said that he was the more gratified at the views put forward because when he opened the discussion on this subject at the Annual Meeting in Glasgow last year and advocated early operation, he had received little or no sympathy or support. He was in complete agreement with Mr. Bourne when he insisted on the advantage of early operation. There could be little doubt as to the desirability of saving patients from the prolonged ill health which usually followed the expectant method of treatment. Hence the need for early operation. While he agreed with Mr. Bourne as to the general principle of early operation, he was not able to follow him in his method of operation. He had hitherto removed the bulk of the diseased tube and made a new abdominal mouth for it, using no drainage but filling the pelvis with saline solution. He knew of no case in which both tubes had been operated on in which subsequent pregnancy had occurred. Mr. Bourne had divided his cases into two classes: (1) Those in which the tube was not much damaged and in which he slit the tube and drained; (2) those in which the tube was so greatly affected that he considered it necessary to remove it. The drainage was the weak point in his method. Drainage was followed by adhesions, and adhesions were surely likely to be a barrier to the ovum reaching the tube and uterus from the ovary. Drainage thus defeated the main object he had in view—namely, the probability of future pregnancy. Slitting the tube would appeal to him if Mr. Bourne could advise them to get rid of drainage. Colpotomy had been advocated as a method of treatment, but in such cases as Mr. Bourne had been discussing it was useless. By that method they could drain an abscess in Douglas's pouch, but they could not adequately deal with the tubes. It had been objected that tubal pregnancy was likely to result after operation. Surely this was not a valid objection, since a tubal pregnancy could hardly occur in a case in which slitting or resection of the tubes had been done. He contended strongly that early operation was desirable. It had been remarked that the surgeon seldom saw the early cases. That was a matter which the education of the profession and the public would remedy. The same difficulty formerly existed in regard to acute appendicitis, and it had now disappeared.

Professor R. J. JOHNSTONE (Belfast) said that he saw very few cases of the nature described. In acute salpingitis it was necessary to bear in mind that they were not dealing with disease of one hollow organ, as in appendicitis, but with disease which involved the whole generative apparatus. In slitting the tube they were only dealing with part of the disease. The bad results following treatment of the tube were not so much due to the damage to the tube alone, but to the general damaged condition of cervix, endometrium, and ovaries. He thought that there was a slight danger to life in operating on acute cases, small though it might be. The slight additional trauma of the operation might be sufficient to turn the scale and set up general septicaemia. There was a real danger, too, that trauma might extend the local spread of infection. Drainage was certain to produce adhesions. If the source of infection could be got rid of he believed that adhesions would disappear, but if all

sources of infection were not removed adhesions would persist. How could secondary infection down the drainage channel be avoided if the infected tube were drained? The great difficulty with all gonorrhoeal infections was that at an early stage they became mixed infections, and it seemed to him that they were courting the same result in draining the tube. Again, a persistent drainage fistula might occur which was exceedingly hard to cure. At present what was wanted was proof that early operation was of more benefit than the old-fashioned medical measures. He was not yet convinced that the results of early operation were really better. It was true that pregnancy did not occur after the older methods of treatment, but was there any evidence that it occurred after the new methods? He asked for how long had drainage to be carried out, and how many cases came back later with ventral hernia.

Dr. GILMORE CURRIER (U.S.A.) then demonstrated an apparatus which was being used at the present time in America for inflating the tubes in order to discover whether or not they were sealed without the necessity of opening the abdomen. He remarked that it was interesting to note that a certain percentage of cases actually became pregnant after being tested with this apparatus, without any other measures being adopted.

Mr. LOUIS RIVETT (London) spoke with actual experience of hte instrument just demonstrated. He was quite convinced that it offered an ideal means for discovering at operation whether tubal strictures were present or not. He thought that any woman otherwise condemned to sterility would take a five to one chance of becoming pregnant. He would go further than Mr. Bourne and conserve tubes which showed a few grey gangrenous patches. He did not think that the risk of setting up general peritonitis by operating in the acute stage was by any means great. Severe secondary haemorrhage from sloughing of the pedicle after a delayed operation was a very real risk which could be completely eliminated by the early conservative operation. Another point he wished to stress was that in the early cases the abdominal ostium was not closed, whereas stenosis of the uterine ostium probably was present. Witness the free leakage of pus from the abdominal ostium which otherwise would take place into the uterus.

Dr. HENDRY (Glasgow) agreed that it was very difficult to get cases in the early stages. He thought the President was asking for a criterion of pregnancy occurring after salpingitis which was very hard to fulfil: he required the abdomen to be opened to furnish the proof. He thought, too, that the dangers of expectant treatment had been much overdrawn. Perforation of the bowel, particularly in cases which did not follow abortion, was very rare. The only case of primary perforation of the bowel in a series of 500 cases collected in Glasgow occurred in a post-abortion case which had been for three months under expectant treatment outside. He thought that the difficulty in the delayed operation could be very much reduced by delaying it still longer than was usually done. The surrounding local lesions tended to clear up and leave the tubes much more freely movable. He advised that cases should be left absolutely alone until all temperature disturbances had long ceased. He thought that the excellent results of Mr. Phillips spoke more in favour of expectant treatment because there seemed to be a large number of cases which clinically were acute salpingitis which appeared to clear up spontaneously. Mr. Phillips's operations were very suitable where symptoms only of sterility remained.

The PRESIDENT thought that a great deal of valuable evidence had been forthcoming, but it was rather disappointing. The evidence as to the restoration of tubal function, whether by early operation or as the result of expectant treatment, was very small indeed. The chances of subsequent pregnancy appeared to be very small. Mr. Phillips's results held out a ray of hope, but his cases were as yet too few. He remained convinced that early operation should be the treatment of choice. The medical profession must be educated to send these cases earlier. The conceptional value of a tube treated by expectant methods was so poor that he certainly preferred early operation to delay.

Mr. BOURNE, in reply, said that the question turned upon the desirability of early operation, and, if early operation was practised, upon the proper procedure to be carried out. He said that the discussion had confirmed him in the belief in the wisdom of early operation, and the evidence of Mr. Phillips on the results of plastic operation on the chronic tube provided valuable support for the preservation of the acute suppurating tube by salpingostomy. The drainage tube should be removed after one or two days, thus preventing the formation of adhesions.

CERTAIN OBSERVATIONS ON THE INNERVATION OF THE UTERUS.

BY

BECKWITH WHITEHOUSE, M.S.LOND., F.R.C.S.,

AND

HENRY FEATHERSTONE, M.A., M.B.CANTAB.,

Birmingham.

THE problem of uterine innervation and the nervous mechanism controlling parturition is one which has for many years interested the physiologist, and one which is of considerable practical importance to the obstetrician.

Historical.

In introducing this further contribution to the subject, it is necessary to refer briefly to the work of other observers, a detailed summary of which will be found in the very excellent and complete article contained in Marshall's recently published *Physiology of Reproduction*.[1]

As long ago as 1867 Kehrer[2] noted that the uterus, when severed from all its attachments, underwent contractions if kept moist at the body temperature. This observation has since been confirmed by various other workers, including ourselves.

In 1871 Sir James Simpson[3] found that parturition was normal in the case of sows from which he had removed the dorsal and lumbar cord, with the exception that the last foetus of the litter in each case was not delivered. In the same year Riemann[4] recorded an experiment in which a cat was delivered of a kitten after complete destruction of the spinal cord from the third dorsal vertebra downwards.

These experiments, coupled with Amand Routh's[5] observations on the course of labour in women suffering from paraplegia, prove that an intact central nervous system is not *essential* for the uterus to complete its physiological function.

Belief in the existence of a so-called "lumbar centre" is, however, fairly general, based on the original experiments of Serres[6] in 1824 and the more recent observations of Langley and Anderson in 1891 and 1895.[7] Langley stated that the majority of efferent nerve fibres passed to the uterus "by way of the sympathetic in the region of the fourth, fifth and sixth lumbar ganglia, and that stimulation of the second, third, fourth and fifth lumbar nerves in cats and rabbits causes pallor and contraction of the Fallopian tubes, uterus, and vagina, but that stimulation of the first and sixth lumbar nerves produces no effect."

The recent work of Cushny,[8] Fellner,[9] and Keiffer[10] in 1907 and 1908, tends, however, to prove that the problem is much more complex than appears on the surface. Cushny found that stimulation of the hypogastric nerve in the rabbit as a general rule produces powerful contraction whether the uterus is pregnant or not. Fellner, on the other hand, regards the hypogastric as being motor only to the circular muscle fibres of the corpus uteri and the longitudinal fibres of the cervix. It is inhibitory, in his opinion, to the longitudinal fibres of the corpus and the circular fibres of the cervix, which are controlled entirely by the "nervi erigentes." The existence of a complicated system of sympathetic ganglia and nerve trunks in the muscular wall of the uterus has been demonstrated by Keiffer of Brussels.

Our interest in the problem was stimulated by the observation, noted by us in a previous communication,[11] of the extraordinary power of contraction possessed by the uterus in cases of Caesarean section performed under lumbar spinal anaesthesia with tropacocaine. A detailed investigation, partly clinical and partly experimental, was instituted to ascertain if possible the cause of this increased tone and contraction of the uterine musculature. The research is still in progress, and the present paper simply records the observations noted to date, based on clinical work and animal experiment. The deductions can in no sense

regarded as final, and may require modification as the work proceeds.

No reference is made on this occasion to certain histological details, which we hope to bring forward at some subsequent date.

Clinical Results.

The clinical material upon which our observations are based was selected to ascertain the character and nature of uterine contraction at various periods of pregnancy, when the nervous impulses from the lumbo-sacral cord were eliminated by means of spinal anaesthesia. The cases include:

(*a*) Abdominal Caesarean section, at the eighth and ninth months of gestation for such varying indications as contracted pelvis, placenta praevia, fibroids, and toxaemia.
(*b*) Vaginal Caesarean section during the fourth and fifth months of pregnancy.
(*c*) Evacuation of the ovum at the second month of gestation.

The technique employed was practically the same in all cases, and is identical with that outlined by us in a previous communication.[11] Briefly, it consists in injecting 1.5 c.cm. of a 5 per cent. solution of tropacocaine (Allen and Hanbury) dissolved in normal saline solution into the spinal theca, by means of a Barker's syringe introduced between the second and third lumbar vertebrae, after 10 c.cm. of cerebro-spinal fluid have escaped from the needle.

When the lumbar cord is paralysed by the drug, usually in about five minutes, the uterus always contracts, and it does not relax until the drug ceases to act. This is the case whether a general narcotic—for example, nitrous oxide, ether, or chloroform—is administered in addition or not. Further, the contraction appears to involve the circular muscle fibres of the uterus, the longitudinal being unaffected. In other words, the uterus grips the ovum firmly, and on several occasions before the abdominal incision was made the organ was noted to stand forward and to become markedly prominent.

When the membranes are incised and the liquor amnii has escaped, the uterus contracts down upon the foetus with extraordinary rapidity, and may cause some difficulty in extraction. This is especially the case when the membranes have ruptured before operation, and, in the interest of the child, rapidity of technique is essential.

The lower uterine segment and cervix also appear to be involved in the increased uterine "tone." There is certainly no "polarity" as evidenced by dilatation, and in one instance some difficulty was experienced in extraction of the placenta per vaginam. Previous to operation in this case the degree of dilatation of the cervix appeared such as to warrant expulsion of the placenta *per vias naturales*. This in practice was rendered very difficult owing to the increased tone of the circular muscle fibres of the lower uterine segment. The uterus contracts equally well whether labour has started or not, and in our experience the tired organ, after forty-eight hours of expulsive effort, contracts quite powerfully when the lumbar stimuli are eliminated.

Further, we note that the contractile power is in no way diminished during the earlier months of pregnancy, as was shown by two cases of vaginal Caesarean section at the fourth and fifth months of pregnancy and the evacuation of the uterine contents at the second month. On the other hand, contraction of the circular muscle fibres during pregnancy will not induce labour, as in the case of a patient from whom a large vaginal cyst was removed under lumbar anaesthesia during the fourth month of her pregnancy. The gestation in this case is proceeding normally to term.

The contractile power of the uterus under spinal anaesthesia is in marked contrast to what is generally observed when a general anaesthetic is administered. Under chloroform, ether, or nitrous oxide narcosis, alone, however light or deep, the uterus when induced to contract, by manipulation or otherwise, generally relaxes somewhat after a few moments. This, in our experience, is never the case when the lumbo-sacral cord stimuli are eliminated, the contraction and tone persisting until such stimuli are restored.

With regard to the influence of spinal anaesthesia upon normal labour, we have been rather chary of experimentation owing to our direct observations of the behaviour of the uterus in cases of Caesarean section. As already noted, it appears to be the circular fibres of the uterine wall, both corpus and cervix, which are inhibited by the lumbo-sacral autonomic system, and for this reason we think that these stimuli should not be cut off until dilatation of the cervix is complete.

In one patient, a 3-para, to whom a spinal injection of tropacocaine was given when the os was fully dilated and the membranes ruptured, the second stage of labour occupied one and a half hours. The uterus never relaxed, but, on the other hand, there were no strong intermittent expulsive contractions. The child was expelled, painlessly of course, by means of strong voluntary expulsive efforts on the part of the patient, reinforced by the hand of the medical attendant on the uterus. In other words, the child was partly expressed from the uterus. The placenta was delivered at the end of fifteen minutes and the lochia was less than normal.

The necessity for expression of the child, due to loss of the normal expulsive mechanism under lumbar anaesthesia, is important evidence, in our opinion, of tonic stimuli of the central nervous system normally exerted upon the longitudinal muscle fibres of the uterus.

With regard to operations on the non-pregnant uterus, no contraction of the uterine muscle was noted, and the only observation of interest related to the sensory impulses. When total abdominal hysterectomy was performed under spinal anaesthesia in the absence of adhesions to other organs, we found that it gave rise to very little, if any, shock. Should the organ, however, be adherent to small intestine, considerable shock and discomfort of a vague type are produced. This appears to indicate that the autonomic sensory fibres from the uterus enter the spinal cord below the dorsal region, while sensory fibres from the ileum enter the dorsal region above the narcotized area.

Experimental Evidence.

The experimental work in connexion with this investigation is being carried out in the Pathological Department of the University of Birmingham with the kind assistance of Professor Haswell Wilson and Dr. A. F. Wright, M.C., to whom we desire to express our indebtedness. The results of certain animal experiments performed for us by Dr. Wright and independently confirmed by him are here recorded.

Experiment 1.

Rabbit No. 1; two weeks pregnant. Ether narcosis. Laparotomy and inspection of abdominal contents. Peristaltic movements of intestines well marked; no movements observed in pregnant uterus. Lumbar puncture performed. Peristaltic movements of intestines continued; uterus unaffected. Tropacocaine (2½ per cent.) injected into lumbar spinal theca. Uterus immediately contracted. Spinal cord severed in upper lumbar region. Uterus contracted further and no subsequent relaxation noted. Dorsal region of cord pithed without relaxation of the uterus. Uterus excised and placed in bath of normal saline at temperature of 37° C. Rhythmical contraction and relaxation occurred for five minutes.

Experiment 2.

Rabbit No. 2; three weeks pregnant. Ether narcosis. Laparotomy, and pregnant uterus containing seven embryos eviscerated into normal saline bath at temperature of 37° C. No movements of uterus noted until lumbar cord was narcotized, when permanent contraction occurred. This was increased by palpation, but did not relax completely. Injection of tropacocaine into dorsal region of cord produced no alteration in the uterine contraction. The dorsal cord was next pithed, without any change. The right broad ligament containing the uterine and ovarian vessels and nerves was then clamped and divided. The right uterus immediately commenced rhythmic contractions; the left uterus remained tonically contracted. The uterus was finally excised and placed in a warm saline bath. Peristaltic waves of contraction, apparently commencing in the region of each Fallopian tube, continued for several minutes.

Experiment 3.

Rabbit No. 3; three weeks pregnant. Ether narcosis. Laparotomy; intestines and uterus containing five embryos eviscerated and placed in warm saline. Lumbar cord pithed, followed by tonic contraction of uterus. Dorsal cord pithed without alteration in condition of uterine muscle. Mesentery divided without effect on uterus. All tissues divided at junction of lumbar and dorsal regions, with the exception of the abdominal aorta and inferior vena cava. The uterus did not relax. The uterus was excised and placed in saline. The temperature of the latter had fallen to 30° C., and no peristaltic movements were observed. The temperature of the bath was raised to 37° C., when rhythmic contraction and relaxation of the excised organ commenced.

Experiment 4.

Rabbit No. 4; four weeks pregnant. Ether narcosis. Laparotomy; hypogastric nerve exposed and stimulated by faradic current. This produced contraction of the circular fibres of the uterus, the portion of the organ containing each foetus becoming

pale and the transverse diameter being diminished. The portion of the uterus intervening between the various foetuses did not diminish and no contraction of the longitudinal fibres was observed. The lumbo-sacral cord was next exposed, and the faradic current applied to the same, and to the third and fourth lumbar nerves at the point where they left the cord. Stimulation both of the lumbar cord and of the third and fourth lumbar nerves produced marked contraction of the uterus and vagina, the contraction apparently involving the longitudinal fibres only. A longitudinal band, extending along the convex surface of the uterus and opposite to the mesometrium, became very evident by reason of its pallor, and resembled one of the taenia of the colon. The uterus diminished in length from the Fallopian tube to the vagina. No contraction of the circular fibres, however, was evident, as shown by any diminution in the transverse diameter of the uterus at the seat of each embryonic attachment.

The observations recorded in the foregoing experiments may briefly be annotated as follows:

1. When the lumbar cord of a rabbit is narcotized, the pregnant uterus passes into tonic contraction, the contraction apparently involving the circular muscle fibres only.
2. When the spinal cord of the same animal is divided in the dorso-lumbar region, and the lumbar cord is pithed, the tonic uterine contraction persists.
3. When the dorsal cord of the same animal is pithed, the uterus remains in a condition of systole.
4. When one cornu of the uterus in the same animal is isolated by section of the vessels and nerves in the mesometrium, this cornu relaxes and exhibits rhythmical peristaltic movements. The other cornu, with undivided mesometrium, as a control, remains contracted.
5. Transverse section of a pithed rabbit at the brim of the pelvis and division of all the structures supplying the uterus at this level with the exception of the aorta and inferior vena cava do not affect the continuity of the uterine contractions.
6. The excised uterus placed in warm saline solution continues to contract rhythmically in peristaltic waves for some minutes. Each wave apparently commences at the Fallopian tube and passes towards the vagina.
7. Stimulation of the lumbar cord and certain lumbar nerves produces contraction of the pregnant uterus and the vagina, but the contraction involves the longitudinal muscle fibres only.
8. Stimulation of the hypogastric nerve in the rabbit produces contraction of the pregnant uterus, but the contraction involves the circular muscle fibres only.

These facts, which in part confirm and in part differ from the results noted by other workers, are of interest when taken in conjunction with the clinical details already noted. Other observers have relied almost entirely upon laboratory experiments for their results. In this investigation with the aid of spinal narcosis we have the advantage of checking animal experiment by direct observation upon the human uterus and vice versa.

Again, most writers, with the exception of Fellner and Cushny, have been content to regard the uterus as a whole, and to observe the effect of stimulation of various nerves on the organ without reference to the individual muscle bundles involved. We regard this as a most important aspect of the problem. Fellner, to whose work we have already referred, regarded the hypogastric nerves as "motor" for the circular bundles of the corpus uteri, and the longitudinal bundles of the cervix, but "inhibitory" for the longitudinal muscle of the corpus and the circular muscle of the cervix. The lumbar cord, by way of the nervi erigentes, is, in his opinion, motor for the longitudinal muscle of the corpus and the circular muscle of the cervix, but inhibitory for the circular bundles of the corpus and the longitudinal bundles of the cervix.

Our work confirms Fellner's views with regard to the corpus uteri, but from our experiments and observations to date we differ from him on the question of the lower uterine segment and the cervix. We think that the circular fibres of the uterus, both in corpus and cervix, are stimulated by the sympathetic system and inhibited by the lumbar cord. The longitudinal fibres, on the other hand, both corporeal and cervical, also the longitudinal muscle in the vagina in the case of the rabbit, appear to us to be stimulated by lumbar cord impulses, and inhibited by the sympathetic. In other words, local paralysis of the lumbar cord, whether permanently by trauma or temporarily by spinal narcosis, produces marked contraction of the circular muscle fibres of the uterus as a whole, owing to uncontrolled sympathetic impulses, but the expulsive power is lost owing to paralysis of the longitudinal fibres.

Similarly, weak or absent sympathetic impulses produce overaction of the longitudinal fibres and increased expulsive efforts. The tone of the uterus as a whole, however, is lost and the organ is "flabby" owing to paralysis of the circular fibres. There is a good deal of evidence, both experimental and clinical, which indirectly tends to confirm these suggestions. To refer once more to Sir James Simpson's observations in the case of sows from which he removed the spinal cord before parturition. He observes that "the uterine contractions were sufficient to expel the foetuses from the uterus, and each foetus as it came into the vagina was thence extruded by the force transmitted from the foetus behind it; but when the last foetus came into the vagina it remained there, because there was nothing to transmit the uterine expulsive force." This interesting observation is probably explained by the fact that the circular muscle fibres with the mechanical advantage were sufficient to expel all the foetuses but the last. The last could not be expelled because the mechanical advantage was lost and the longitudinal expelling fibres of the uterus were paralysed.

Brachet,[12] quoted by Amand Routh, records the only case in which a spinal lesion actually involved the lumbar cord. In this patient the uterus contracted, but the contractions were not sufficient to expel the child, which had to be extracted by forceps. The placenta was also removed by hand. In Routh's cases the lesion was not in the lumbar cord and the lumbar influences cannot be regarded as being eliminated.

With regard to the influences of lumbar anaesthesia on the course of normal labour, our observation is interesting, since with the patient on whom it was tried, a multipara with a fully dilated cervix, the second stage of labour occupied one and a half hours. Further, the delivery was aided by pressure upon the uterus from the abdomen. Nevertheless, the uterus appeared to be firmly contracted for the whole time, and subsequently the amount of haemorrhage after separation of the placenta was less than normal. In other words, it was the expulsive power of the uterus which was diminished by lumbar anaesthesia.

Contraction of the circular fibres of the lower uterine segment is very evident when a Caesarean section is performed under lumbar anaesthesia, and the difficulty we experienced in one case in delivering the placenta into the vagina owing to contraction of the cervix has already been noted. Probably once the cervix is fully dilated the contractile power of the muscle is diminished by local paralysis from pressure of the presenting part. At the same time, we are of opinion that the administration of a lumbar anaesthetic before full dilatation of the cervix is a procedure attended by some risk, owing to the possibility of contraction from sympathetic influences. Any subsequent dilatation must be purely mechanical, owing to the paralysis of the longitudinal or "taking up" fibres, and may be attended by severe haemorrhage from laceration of the tissues.

The mechanism involved in the normal "systole" and "diastole" of the uterus has still to be investigated. As we, in common with other observers, have noted, the uterus when severed from all its connexions undergoes rhythmical contraction and relaxation as long as it is maintained at a normal temperature. It also responds immediately to various stimuli applied—for example, tactile, heat, faradism, etc.—behaving in this respect identically with other organs composed of involuntary muscle. Keiffer's work upon the uterine ganglia and the uterine musculature has thrown light upon the problem, but many points still remain obscure.

The present position may in general terms be summarized as follows:

1. The nervous mechanism controlling the uterus is constituted by three systems: (*a*) local, (*b*) sympathetic, (*c*) lumbo-sacral autonomic.
2. The "local" system is capable of producing rhythmical uterine contractions, and is independent of the sympathetic and autonomic systems, in common with other involuntary muscle.
3. The sympathetic stimuli are motor to the circular muscle fibres and inhibitory to the longitudinal bundles.
4. The lumbar cord stimuli are motor to the longitudinal fibres and inhibitory to the circular fibres.

5. Both autonomic and sympathetic stimuli are controlled by higher centres in the medulla and possibly the cortex, but are capable of acting independently of the same.

6. Reflexes, both (*a*) autonomic and (*b*) sympathetic, are probably important factors in normal uterine contraction. (Reference may be made to mammary and perineal stimulation.)

7. Uterine contractions, to be effective, depend equally upon the integrity and correctly adjusted balance of autonomic and sympathetic impulses. Disturbances in either, whether in the direction of augmentation or diminution, will interfere with the normal course of parturition.

Practical Application of Results.

In conclusion, we cite a few instances where the observations here recorded may possibly find a practical application.

In the first place, in classical Caesarean section, the advantages of lumbar narcosis, either alone or combined with a general anaesthetic, are evident. By elimination of inhibitory stimuli from the lumbar cord and allowing the hypogastric impulses full play, the circular muscle fibres of the uterus contract firmly, and in so doing reduce haemorrhage to a negligible amount. In one of our cases the foetus and five fibroids were removed at term with only a trifling amount of bleeding. The contraction of the circular fibres also produces more marked eversion of the edges of the uterine incision than is normally present, and consequently the introduction of the uterine sutures and accurate coaptation of the cut surfaces is facilitated.

Secondly, in cases where a temporary increase of intra-uterine tension is indicated, as in *ante-partum* haemorrhage from premature separation of a normally situated placenta, it is possible that this may be obtained without risk of inducing labour by means of lumbar cocainization. With placenta praevia, on the other hand, although the haemorrhage might be controlled for the time being by contraction of the lower uterine segment, it is probable that subsequently it would be increased, owing to greater separation of the placenta.

Thirdly, when the uterus is exhausted, we are of opinion that spinal anaesthesia will undoubtedly diminish the tendency to *post-partum* haemorrhage. Certainly, in those cases which we have observed, it diminishes the amount of bleeding from the placental site. For the same reason we prefer spinal to general anaesthesia when it is necessary to evacuate the uterus by the vaginal route during the earlier months of pregnancy.

Tonic uterine contraction during labour, either general, or local as in the "contraction ring" and so-called "rigid cervix," we believe to be due to excessive sympathetic stimulation, probably from fatigue of the lumbar centre. Some cases of intrinsic dysmenorrhoea possibly have a similar etiology, for, after all, each menstrual period is a miniature labour.

Finally, we repeat a note of warning in connexion with the employment of spinal anaesthesia in normal cases of labour. By its use dilatation of the cervix will be delayed, and even if administered at the commencement of the "second" stage, the expulsive power of the uterus is diminished. Consequently forceps delivery with its attendant risks will in all probability be required.

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The PRESIDENT congratulated Mr. Beckwith Whitehouse on his very fine paper. It was not a paper which lent itself to discussion; time was required in order to read it and follow it out in detail. He was much interested in the subject of the contractions of involuntary muscle. His attention had been directed to the contractions of the intestinal musculature; frequently with spinal anaesthesia in cases of paralytic obstruction the intestine would evacuate itself without the necessity of any further measure being adopted. He had often wondered why physiologists had not made more use of living human embryos, removed sometimes in the course of operations at about the fourth month; their hearts continued to beat for quite a long time.

THE TREATMENT OF SEVERE UTERINE HAEMORRHAGE BY RADIUM.

BY

SIDNEY FORSDIKE, M.D., B.S., F.R.C.S.,

London.

IN a short paper it is not possible to attempt a general survey of functional uterine haemorrhage, and therefore I propose to devote some attention to the treatment of this condition by radium, and to show that the effect of exposure to radium is due entirely to changes in the endometrium and in no way due to any action upon the ovaries.

Functional uterine haemorrhage must for the moment be defined as uterine haemorrhage without detectable lesion. Speculation as to the cause or causes has carried us into the realm of the endocrine glands, where we wander hither and thither, weaving fantastic pictures of the excess energy in one gland and the deficiency in another; and one writer has gone so far as to illustrate his ideas of the contribution of these varied glands by means of a ring—reminiscent of the benzene ring—each arc of the circle bearing its share in the general welfare of the organism. Speculation is only of value in so far as it stimulates the search for truth, and, where it fails of this, it remains the idle gossip of a lazy mind.

For the moment I am not concerned with causes; but in passing I must pay tribute to Bourne and Wilson for having classified a fraction of this group by the association of the uterine haemorrhage with hyperthyroidism, and their subsequent successful application of *x* rays to the thyroid gland. At the same time I must register my opinion that hyperthyroidism is only concerned with a fraction of the whole, and by diligent search we may hope to classify the remainder. In the absence of precise causation, we are faced with symptomatic treatment. In the less severe cases the salts of iron, magnesium, and calcium, with a change of scene, frequently play a useful part; and, by contrast, ergot, in my opinion, is valueless, and not infrequently makes the condition worse.

This brief review, however, is only concerned with severe cases, in which ordinary measures have failed and where curettage, performed even up to five times, has only sufficed to establish a temporary lull in the story of heavy haemorrhages, and where the increasing anaemia and weakness of the patient compels us to face a grave condition.

In a paper read before the Gynaecological Section of the Royal Society of Medicine in March, 1923, I analysed the results of 45 cases treated by radium, and I have only to add to that report that three of the patients had a recurrence of haemorrhage from eight to nine months after treatment, in one of whom it was so slight as to require no further attention; the other two had each a further exposure, which sufficed to re-establish amenorrhoea. The report on the remainder requires no modification.

I have now treated 65 cases in all of this severe type of haemorrhage, 43 of which had undergone some form of operation, dilatation and curettage being the commonest, one patient being curetted no less than five times; two patients had been curetted three times, and several had undergone the process twice. The other operations noted in the history were excision of polypi, amputation of the cervix, resection of cystic ovaries, salpingectomy, and appendectomy. The remainder were compelled to spend some part of each month in bed or had become so anaemic that further treatment was imperative. Seven of the cases were associated with small mural or subperitoneal fibroids, all of which responded equally well to the treatment, and no detectable change was found in the size of the subperitoneal fibroids on examination some months after treatment.

In passing, I may say that I am of opinion that where a fibroid tumour calls for treatment at all, it calls for surgical treatment—myomectomy in suitable cases, failing which hysterectomy—and that radiation should only be called upon to check the haemorrhage and restore the patient in preparation for surgical interference. On the contrary, where severe haemorrhage is the cardinal symptom and a small fibroid is only discovered in the course of examination under the anaesthetic, then I am of opinion that exposure to radium is the best treatment.

The technique was fully described in the paper already mentioned, and I would only emphasize the fact that all these patients are treated by radium *in utero* and not by irradiation through the abdominal wall, nor yet by radium left in the vagina; and that all are subjected to a preliminary exploratory curettage.

The youngest of these patients was 18 and the oldest 55 years; there were ten cases under the age of 26, three of whom have already been discussed. Two of the remainder, aged 18 and 19 respectively, were so blanched when seen that they were immediately brought in by ambulance for treatment, and therefore any further temporizing was contraindicated. Therefore 50 mg. of radium sulphate was placed in the uterus for twenty-four hours, so establishing amenorrhoea. One of these cases is of three months', the other of five months' duration, so their subsequent history will be of considerable interest. Whatever the history be, they will be better off than a nullipara, aged 24, whose uterus and appendages were recently shown as having been removed for uncontrollable haemorrhage. The other five of this group, aged 19, 20, 20, 22, and 23, were treated with 50 mg. of radium sulphate for varying times of five to ten hours. In four of these cases the period was reduced in length and loss to reasonable proportions; the fifth has gone abroad, and I have not yet heard from her. The remainder of these cases followed more or less the course described in the paper already mentioned.

The sole contraindication to the use of radium is acute or chronic pelvic peritonitis. Such cases are apt to exhibit curious phenomena—namely, the onset of a subacute inflammation, terminating in abscess with the formation of large inflammatory tumours. The immediate disturbances are pelvic pain, relieved on the removal of the radium, transient frequency of micturition, and occasionally somewhat prolonged anaesthetic vomiting, relieved on the removal of the radium.

The treatment is usually successful after one exposure, but in seven cases I have had to give a second exposure, three of which were imperative. One or two periods, less commonly a third, of the nature of prolonged shows, are subsequently seen. Where a second exposure is given, anaesthesia is not necessary, except in highly nervous women.

The time at my disposal being short, I must now proceed to discuss the question of how radium acts: whether upon the ovaries, the uterus, or both.

Following tradition, we seem content to accept the German view that radium acts through the ovaries, and the statement repeated from mouth to mouth that "radium acts by castration," or "radium sterilizes the patient," grows somewhat wearisome by repetition. It is, of course, true that radium produces a menopause, but a menopause without the symptoms which are usually attributable to cessation of ovarian function. The clinical evidence in favour of this statement I argued in the paper above mentioned, and time will not allow of repetition; but I may add that the results in the increased number of cases supports the view then expressed. I propose to deal with the experimental evidence in some detail.

I conducted a series of experiments upon cats, in which the conditions which obtain clinically were reproduced as nearly as possible. The experiment was performed in this way:

A pregnant horn was opened and the foetus removed. The radium (100 mg. radium sulphate) was then implanted and the uterine horn closed around it by suture. The opposite ovary was fixed at a distance of 8 cm. from the radium, and the distance side was lightly attached to the wall of the uterine horn in which the radium was buried. The radium was removed at the end of twenty-four hours. The experiment was repeated, the animals being killed at 12, 21, and 60 days.

In all the experiments the ovary on the same side as the radium showed profound and characteristic changes, complete destruction of large and small follicles, the corpora lutea were broken up, and in the later survivals only a few of the lutein cells were recognized. In all the experiments the opposite ovary at a distance of 8 cm. from the radium showed no variation at all from the normal. The uterine horn which contained the radium showed atrophy of the endometrium, diminution in the size and number of the glands, diminution in capillaries, and later still few stroma cells and great increase in connective tissue. The only criticism levelled at the work was based on the ground that 8 cm. is an average distance between the ovary and uterine cavity, and that it was impossible to be sure that the ovary was normally situated. Since then I have conducted a further series of experiments where the ovary was fixed at a distance of 4 cm. and the animals were killed at 6, 14, 28, 35, and 49 days, the technique employed being precisely the same as before, save in the matter of the interval between the ovary and the radium. Again no microscopic change could be detected in the ovary. Now, the ovary is one of the most radio-sensitive organs, and with very limited exposures characteristic changes are observed, for which I must refer you to the Jacksonian essay.

I venture to assert that radium arrests uterine haemorrhage solely through its action on the endometrium. A prolapsed ovary lying near the uterus would be diagnosed, and, if the condition of the patient was imperative, the exposure to radium would be given with the certainty that the ovary was going to be affected, whereas any mass felt which might bear the interpretation of chronic pelvic peritonitis would be an absolute contraindication, for pelvic inflammation finally negatives the use of radium.

DISCUSSION.

The PRESIDENT said that such papers, founded on direct histological evidence, were of the greatest scientific value. There could be no doubt that radium, properly applied, did check uterine haemorrhage. In certain cases extremely good results had been obtained. He was glad to hear that Dr. Forsdike did not think that fibroids should be treated by radium. It was not by any means easy sometimes to determine the cause of these severe haemorrhages. Sometimes they were found to be due to fibroids so small as to be practically undiagnosable. Frequent curettage of one patient was a practice which could not be too strongly condemned. One curettage should be sufficient; multiple curettage was simply a sign of ignorance. It had been his practice in these cases of uncontrollable haemorrhage to open the abdomen, lay open the uterus, and inspect the inside carefully. Sometimes small fibroids would be found, or there might be a small polypus in one uterine cornu; sometimes there was simply a localized thickening of the endometrium. He then applied the curette through the uterine opening, and was able to do this far more thoroughly than ever it could be done through the cervix. The patient would then generally cease to menstruate altogether for from six to nine months. In the most severe cases, where the patient was critically ill, he thought the safest plan was to do a rapid subtotal hysterectomy. In this type of case in young women the uterus was often very small and ill developed, so that they might not be much the worse for losing the uterus. He was not yet satisfied that radium was to be preferred to hysterectomy in these severe cases. Radium, when properly applied, probably destroyed the endometrium completely and permanently. To remove the ovaries as well as the uterus in a young woman was nothing less than a crime. He thought that a red-hot poker, if it could be applied, would probably be as effective as radium. It might be necessary to apply radium several times. He thought repeated applications of radium carried a grave risk of recto-vaginal or vesico-vaginal fistulae, and cited some examples he had met with in his practice.

Mr. BECKWITH WHITEHOUSE (Birmingham) thought that these cases were very difficult to treat. He cited an instance where he had used radium, but the haemorrhage did not stop and the patient died. Subtotal hysterectomy would probably have saved her. He agreed with the President that multiple curettage was a dreadful mistake. He thought that radium might act by holding up the function of the endometrium, possibly destroying its hormones, until the full development of ovarian function. If the endometrium were found to be atrophic after diagnostic curettage, radium would probably do good. He wondered whether, in those cases of Dr. Forsdike's where ovarian changes had been demonstrated, these changes could be ascribed to the atrophy of the endometrium rather than to the direct action of the radium.

Dr. W. R. GROVE (St. Ives) believed that many of these cases would be found to have calcium deficiency. He had come to the conclusion that calcium deficiency was evidence of blood sepsis, preventing healthy healing and predisposing to the manifestation of disease in the patient's weakest spot. A chronic eczema would frequently be healed if calcium efficiency could be established. If an intramuscular injection of 1 grain of calcium chloride were repeated daily for two or three days haemorrhage would probably cease, but parathyroid extract was the only thing by means of which permanent calcium efficiency could be maintained.

Dr. JOHN CAMPBELL (Belfast) had been very disappointed in the use of radium in cases of uterine haemorrhage. He was interested to hear that radium produced atrophy of the endometrium. Thirty years ago nitric acid and other agents had been employed to achieve the same purpose. He had been in hopes that radium might supplant operation in the case of the smaller fibroids, but he had found that this was not so. Surgery had not lost its place even with small fibroids. He had seen fistulae following the use of radium in several cases, but in only one was the fistula permanent—the others healed spontaneously without the need of operation.

Dr. RUSSELL GREEN (Birmingham) thought the comparison of radium therapy to the action of a red-hot poker both fortunate and unfortunate. It was unfortunate because it obscured the idea lying behind radiation methods—namely, that a selective action could be exerted. It was fortunate because it illustrated the fact that, in order to produce an effect even slightly remote from the point of application of radium, a much greater dose must be given at the point of application. If the dose required was a fairly big one, the radium dosage delivered from a remote point was very greatly larger, and then there was the danger of sloughing. The Erlangen-Frankfurt technique had been evolved to avoid, and did avoid, this danger inseparable from radium therapy.

Dr. JAMES HENDRY (Glasgow) asked Dr. Grove whether he could produce evidence that in these cases of menorrhagia there was a septic condition of the blood. He presumed that Dr. Forsdike did not include the menorrhagia of puberty in his cases. In very young girls these severe haemorrhages generally cleared up with simple medical treatment without the use of radium.

Dr. FORSDIKE, in reply, said that he was afraid that the discussion had become discursive. His cases had been limited to those which had already been treated in a variety of ways without result. He had never had occasion to treat a girl at puberty—they usually got well of themselves. If radium were placed in the vagina it was very likely that a fistula would be produced if the radium were left in long enough. His point was that radium placed in the uterus as he employed it could not cause a fistula. It was the gynaecologist, and not the radiologist, who should use radium on the female genitalia. The ovarian changes he had demonstrated were so gradual that he could not ascribe them as due to the changes produced on the endometrium. In the 65 cases in which he had used it radium had never failed to do what was required of it. In young patients he thought that they should aim to bring about a modification of the haemorrhage rather than completely to abolish it.

MENORRHAGIA TREATED BY INTENSIVE X-RAY THERAPY.

REPORT OF TWENTY CONSECUTIVE CASES.

BY

LOUISA MARTINDALE, M.D., B.S.LOND.,

London.

SINCE last September I have adopted a modification of the Erlangen technique in the treatment of uterine haemorrhage, whether such be due to the climacteric, or to fibroid tumours of the uterus, or to fibrosis of the uterus, as well as for cases of carcinoma and sarcoma, either after or instead of operation. I have been so impressed with my own results, as well as the results I have seen abroad, that I venture to lay before you a short report of twenty cases of fibroids and climacteric haemorrhage treated by myself by this new technique, comparing them with twenty consecutive cases I did by the Freiburg method some years ago. Although these represent only a very small proportion of the cases I have done with the new technique, I feel that any report on my carcinoma cases would be on work done too recently to be of any statistical value. I must also confess that I am still doing a large number of myomectomies and subtotal or panhysterectomies for fibroids. In all cases of doubtful diagnosis I do a diagnostic curetting. In cases of tumours reaching above the umbilicus I am also, unlike many of the distinguished foreign gynaecologists, still doing hysterectomy; also in some cases in which I have diagnosed pedunculated subperitoneal fibroids or in which the symptoms make me believe that there may be some degeneration, malignant or otherwise, of the fibroid tumours.

Surgical treatment is to me sometimes a temptation; hysterectomy or myomectomy in all these non-malignant cases is so satisfactory and the cases do so well; one never has sepsis, and one actually sees for oneself at the operation the uterine condition. On the other hand, I suppose most surgeons still have to confess to a 1 per cent. mortality even for hysterectomy for fibroids.

Gauss of Freiburg, who is an excellent surgeon, uses *x* rays in practically all his cases of fibroids and in all cases of carcinoma of the cervix; in fact, when I saw him at work last year I found he only refused to *x*-ray a fibroid when it was complicated by very urgent pressure symptoms. He goes so far as to say that in doubtful cases he would even do an exploratory laparotomy. If only a small fibroid were present and a myomectomy would suffice he would do myomectomy, but never a hysterectomy. He would close the abdomen and use *x* rays instead.

The new technique, which I must remind you involves only one, or at most two, treatments, lasting about two and a half hours, I have employed since last September. I work with a Symmétrie apparatus on the double coil principle, said to work at a voltage of 200,000, and capable of generating an extremely hard, penetrating radiation, which, when filtered, is practically homogeneous.

I moved to my present house for the sake of its well lighted and airy *x*-ray room, and I work from an ante-room protected by 5 mm. thick lead screening. By means of a specially constructed fan ventilator the air of the room is always fresh, and much of the Roentgen sickness complained of by some radiologists is therefore avoided.

Precision of Dosage.

The chief characteristic of the new technique is precision of dosage. This involves:

1. Knowledge of the exact biological unit skin dose of every tube.
2. Knowledge of the percentage depth dose of every *x*-ray tube employed.
3. Knowledge (and this also is only gained by exact experimentation) of the best filtering for each tube so as to obtain the highest point of homogeneity.
4. Measurement of the coefficient of absorption of each tube in those cases in which Dessauer's curves are used.

These measurements have to be made for each tube certainly every fourteen days, and it is extraordinary how much variation one finds, but it is only with this exact knowledge that one can work with such intense doses with any degree of safety.

I work with 5,200 interruptions in my gas break, with an ampérage of 6 to 7 ampères, and a steady 2 milliampères through my Coolidge tube.

The unit skin dose is that dose which gives on the eighth day a just discernible erythema of the skin, and on the twenty-eighth day a slight pigmentation. It is 10 per cent. less than what we in England call an erythema dose. Having ascertained it for a given *x*-ray tube first by experiment on the human skin (preferably of the abdomen, as the skin on various parts of the body differs), all other tubes can be standardized from this one by means of an ionto-quantimeter. The highest homogeneity point is also ascertained by means of mathematical calculation and the use of the ionto-quantimeter. In the case of the Coolidge tube I have used for a large proportion of my cases I find the highest homogeneity point—that is to say, the best filtration—is 16 mm. aluminium. Therefore for convenience I use 0.5 zinc (= aluminium) + 4 aluminium.

The Depth Dose.

To ascertain what this is at a depth of, say, 10 cm., one places a wooden box containing either water, paraffin jelly, or mashed placenta in between the *x*-ray tube and the ionization chamber. For instance, if the electroscope of the ionto-quantimeter takes 14.6 seconds to discharge on the surface and 45 seconds at a depth of 10 cm., the depth dose is $\frac{14.6 \times 100}{45} \times$ coefficient of dispersion (0.51), or 16.54 per cent. By means of Voltz's tables the depth dose can be estimated for every case, for this varies not only with the focal distance of the tube from the skin, being greater the greater the distance, but also with the size of the field, or port of entry.

Sensibility Tables.

Seitz and Wintz have worked these out. They found that 110 per cent. of the unit skin dose is necessary to destroy carcinoma cells, 80 per cent. sarcoma, and 50 per cent. tuberculous growths, whereas it requires 135 per cent. to destroy intestines and bladder, 180 per cent. to cause degenerative changes in the muscles, and 35 per cent. to destroy the Graafian follicles of the ovary. (The interstitial cells are unaffected by this dose.) All the twenty cases reported were treated with 30 to 50 per cent. of the unit skin dose at a depth of 10 cm., depending upon the individual case.

In Freiburg Gauss places the flexible cable end of the ionto-quantimeter either in the vagina or rectum, so measuring the number of readings until the necessary dose is reached; but I personally feel this is unjustifiably uncomfortable for the patient, especially as it seems to me to be a still more accurate method to measure the depth dose quietly in one's *x*-ray room when alone, and then work under precisely the same conditions—that is, the same ampérage, voltage, milliampérage, heating current, number of revolutions of the break, time of dose, and the same focal distance and filtering.

Climacteric Haemorrhage.

The exact technique I have adopted for climacteric haemorrhage is as follows: The patient is prepared just as for abdominal operation, because the contents in the intestines or bladder may cause secondary radiation, which again may cause injury to the intestinal and bladder mucous membrane. She is put lying flat on a couch and her measurements taken—circumference of abdomen, distance between anterior superior iliac spines, crests, and Baudelocque. Of course, I assume that the usual medical examination has been made—weight measured, urine tested, blood counts made, and, if necessary, a diagnostic curetting performed. If the Baudelocque measurement is less than 20 cm. we can take it that the ovaries lie at a depth of not more than 10 cm. from the skin. If more than 20 the ovary will be a little more than 10 cm., consequently an extra field will be necessary. We have to treat each ovary with 35 per cent. of a unit skin dose, using an anatomical applicator. Therefore, with a 190,000 voltage, 9 to 10 ampérage, with a 2 milliampérage in the secondary current and a Coolidge tube at a focal distance of 23 cm., a twenty-five minute skin dose, and 17.5 per cent. depth dose, we need to give twenty-five minutes anteriorly and posteriorly to each ovary to get a 35 per cent. dose. This means a treatment of about two hours. If we are dealing with a woman under 30 years we require a 40 per cent. dose. To get this it will be sufficient to give an extra field at the side of the others, or to enlarge each field, or take a longer focal distance. In the latter cases we should have to use Voltz's tables. For instance, at 23 cm. a field of 6 by 8 cm. would require twenty-five minutes; but at 50 cm., which would give a very much better depth dose, the same field would require 4.7×25, or 117 minutes, and so on. A castration so obtained would last about two years, and, by varying the dose, we can make it last a longer or shorter time.

In cases of acute gonorrhoea, salpingitis, etc., temporary castration such as this is also being done by many gynaecologists, to avoid exacerbation of symptoms prone to occur at the monthly periods.

Fibroids of Uterus.

The technique for fibroid tumours of the uterus is very much like that for climacteric haemorrhages. If the fibroid is no bigger than a four months' pregnancy exactly the same technique is used. If the fibroid is large and the ovaries are consequently very deep-seated and difficult to localize, it is best to give one very large field (20 by 20 cm.) anteriorly, and another posteriorly. This will involve a bigger focal distance and a very much longer time, calculated by Voltz's tables. Although interstitial fibroids react best, subserous ones are also well treated by *x* rays.

I. According to the Frankfort school, the certain contraindications are as follows:

1. Pedunculated submucous fibroids.
2. Uncertainty in diagnosis (for example, dermoid cyst of ovary, etc.).
3. Complications that are causing symptoms themselves.

II. *X* rays *may* be used:

1. In fibroids complicated with chronic pyosalpinx.
2. In cystic softening with necrosis and suppuration (but no curetting and dilatation must be done).
3. In cases of very large myomata, even if there are pressure symptoms.

III. There are, however, *no* contraindications in the following cases:

1. Pelveo-peritoneal inflammation and inflammation of the tubes.
2. Cervical myomata.
3. Big myomata with some pressure symptoms.
4. Difficulty with micturition.

All these latter cases do well. In sarcomatous growths of the uterus *x*-ray treatment is said to help in the diagnosis. In the case of a fibroid there is a slow reduction in the size of the tumour, whereas in the case of a sarcoma a very quick reduction takes place.

ANALYSIS OF AUTHOR'S CASES TREATED BY NEW TECHNIQUE.

Age.—The youngest patient was 26, the eldest 52, the average being 43.5.

Occupation.—Nine patients were married, 7 having children, 11 were unmarried, 3 nurses, 1 head mistress, 1 secretary, and so on.

Symptoms.—Due to tumour: profuse menorrhagia, 19. Metrorrhagia, 4; pressure symptoms, 2; dysmenorrhoea, 4.

Size of Tumour.—(*a*) Size of five months' pregnancy, 3. (*b*) Smaller than five months' pregnancy, 17.

Kind of Fibroid.—(1) Subperitoneal and interstitial, 4. (2) Interstitial, 11.

Fibrosis of uterus (with slight enlargement only), 5.

Number of X-ray Treatments.—The average number given was 1.45. One treatment alone should suffice, as indeed it has in 12 of my cases, although I have only given a 35 per cent. dose in 4 cases. Of the other cases, 3 have been treated with less than 35 per cent., indeed, in some cases only 27 per cent., and I have therefore needed to give two treatments. In future I intend giving the full 35 per cent. dose in all cases so as to avoid the second treatment.

Diagnostic curettings were done in four cases.

In 8 of my cases there was no further period of haemorrhage after one treatment; 4 cases had one monthly period; 4 cases had two monthly periods after, and 2 cases had three or four after. The other 2 cases are too recent to give any report on.

Roentgen sickness I have not found severe. In only one case was there sickness at the time; in three cases slight sickness some time after; one case was very sick after.

Effects of Treatment.

The effects of treatment, therefore, by this technique one can safely say are excellent. Except for the slightest pigmentation back and front there is no evidence whatever of the patient having undergone so drastic a treatment.

The symptoms were cured in every case except one, in which either the prolonged treatment the patient had already undergone at the hands of another radiologist had set up an immunity to *x* rays, or I had made the mistake of giving her small repeated doses instead of the 40 per cent. dose which I should apparently have ventured to give her in spite of her youth and the *x* rays she had had before. The tumours in every case I examined after had diminished in size—in one case very markedly so; and the pressure symptoms have abated, except in one case. This patient tells me by letter that she is still short of breath, but she does not feel bad enough to come to see me, although I have urged her to come, and she writes very gratefully.

It is remarkable how well the patients seem to feel, and although in about one-third of the cases they complain of some flushings, the complaints are not as bad as those of some of my patients who are going through the normal climacteric.

When I turn to my older cases—some of them now nine years old, and a large number of which I reported at the Cambridge meeting of the British Medical Association—I have no failure to report in the first twenty people who answered my letters of last month. They have all done well and had no further complications, and all are extraordinarily grateful and satisfied with their treatment. But when I think of the number of their treatments and the hours they and I and my *x*-ray sister spent over them, I cannot help being thankful that at last such a sure and certain treatment can be offered to patients suffering from climacteric haemorrhage and from interstitial fibroids smaller than a five months' pregnancy. Indeed, I would like to urge that we do what is being done in all the university hospitals abroad—that is, that every gynaecological clinic should have its own *x*-ray installation and personnel—for I am more and more convinced that it is the gynaecologist who should undertake the *x*-ray treatment of gynaecological conditions.

The only drawbacks are, of course, the expense of the apparatus and the necessity of very accurate work in calibrating both tubes and apparatus, and the paramount importance of conscientious dosage and filtering, as well as unbiased and accurate diagnosis in every individual case.

On the other hand, it seems only right to be in a position to offer a method of treatment so easy and comfortable for the patient, involving no period of time off work, no unpleasantness of an anaesthetic, no long period in a nursing home or hospital, and, above all, a treatment involving no risk to life.

DISCUSSION.

The PRESIDENT said the subject was too big for the Section to discuss fully in the limited time available. He had to confess at the outset that he had no use at all for *x*-ray treatment. He could remember the days when the ovaries were extirpated with the idea of curing fibroids, and it seemed to him that *x*-ray treatment was a return to those methods of barbarism. He had always, even before the war, had a profound distrust of Germans, and did not believe their results. Castration for gonorrhoea seemed to him to be gynaecology gone mad, and similarly *x*-ray treatment for pyosalpinx. For fibroids he was immensely in favour of myomectomy. He had seen the most violent menopause symptoms produced in young women by *x* rays. He had recently had a case of the most diffuse cellulitis of the abdominal wall set up by exposure to *x* rays. He looked upon *x*-ray treatment of fibroids as a most retrograde step, and when operation was attempted after their use the difficulties were increased a thousandfold.

Dr. FORSDIKE (London) confessed that he had not realized the depths of his ignorance until he listened to Dr. Martindale's paper with its maze of technicalities. He repeated what he had said in the paper he had read that morning—that in his view all forms of radiation were absolutely contraindicated in the presence of pelvic peritonitis. He had clearly demonstrated that the ovary never recovered if radiation was pushed to the point of castration—temporary castration was impossible.

Mr. BECKWITH WHITEHOUSE (Birmingham) wished to associate himself entirely with the remarks made by the President. He regarded castration as most emphatically a retrograde step. He asked Dr. Martindale whether she had observed any cases of severe anaemia from destruction of red cells following *x*-ray treatment.

Dr. MARTINDALE, in reply, said that she did not think it was quite fair to compare her results with the tragedies quoted by other speakers. She had had no cases of severe anaemia; her patients had all been wonderfully improved.

RUPTURE OF THE ABDOMINAL AORTA: DEATH FROM ACUTE INTESTINAL OBSTRUCTION.

BY

CLEMENT NICORY, M.R.C.S., L.R.C.P.,

OPHTHALMIC HOUSE-SURGEON, ST. THOMAS'S HOSPITAL.

As an exhaustive research into the literature has failed to disclose a similar complication of rupture of the aorta, I venture to record this case.

On December 26th, 1922, whilst walking in his house the patient, a man aged 52, very stout, a moderate drinker, without history of syphilis, was seized with severe intermittent pain in the right testicle. On the following morning the pain had almost subsided, but returned on his attempting to walk. There was a slight rise of temperature each evening. On January 10th the pain in the testicle returned quite suddenly, and he was admitted to the Torbay Hospital. The radial arteries were found to be rather rigid; the blood pressure was 200 mm. Hg. The patient had passed a restless night owing to abdominal distension and the frequent eructation of gas by the mouth; later he commenced vomiting greenish fluid, which later in the day became brownish and of markedly faecal odour. Death occurred the same day. The Wassermann reaction was negative.

Necropsy.—The right lung was firmly adherent to the parietal pleura; there were fibrous scars in both apices. The heart was markedly hypertrophied, but the valves were normal. Macroscopically, the thoracic aorta showed no abnormalities. The intestines were greatly distended with gas. A dark blue mass was seen bulging the parietal peritoneum in the right half of the abdomen. The ascending colon was embedded in the retroperitoneal mass, but the caecum and appendix were recognizable. Incision of the peritoneum revealed a large blood clot reaching to the upper pole of the right kidney and downwards into the pelvis. The ascending colon had been separated from its peritoneal covering and was so completely surrounded and compressed by the clot that its lumen was almost obliterated. A portion of the clot in the immediate vicinity of the aorta was dark brown and harder than the rest; it was probably older and due to an earlier leak, which may have been responsible for the collapse and pain referred to the testicle on December 26th, a fortnight before death. After clearing away the clot, there was found in the right wall of the aorta, 15 mm. above its bifurcation, a hole 12 by 6 mm.; and a calcareous plaque, beyond which the aorta had given way, and which was still attached to the edge of the perforation. The wall of the abdominal aorta above and below the site of rupture was almost completely calcified.

The rupture appears to have taken place in two stages, as may happen in dissecting aneurysms, the tear involving first the inner tunics, and eventually the external.

It is interesting to note that Durand and Marquezy[1] record a case of dissecting aneurysm of the abdominal aorta in a woman with active tuberculosis and no signs of syphilis, and Muselier[2] describes the case of sudden rupture of the abdominal aorta in a woman of 55, with double apical pulmonary tuberculosis and without evidence of syphilis; though what the precise connexion is between the two conditions has not been demonstrated.

Although spontaneous rupture is associated with the later half of life, Oppenheimer[3] records the case of a girl aged 9 years, in apparently good health and without a history of syphilis, who died from intrapericardial rupture of the thoracic aorta associated with advanced arterio-sclerosis. A similar case is reported by Sparks[4] in a patient aged 16 years.

Syphilis plays an important part in spontaneous rupture of the ascending aorta, but cases are recorded in which rupture followed ulcerative aortitis, suppurative endocarditis, gonococcal salpingitis, and pyaemia.[5]

In the museum of St. Thomas's Hospital there is a specimen (1676A) of a clean transverse rupture of the inner coats of the upper part of the descending thoracic aorta leading to diffuse and extensive haemorrhage into the surrounding connective tissue. There is no macroscopic disease of the vessel, but microscopic examination revealed the presence of marked fatty degeneration of the intima. The patient, a lad aged 18, experienced acute pain in the abdomen for three days, but complained of nothing until the day of his death. When seen, four hours before death, there was nothing in the symptoms to suggest that he was seriously ill. Death was sudden and unexpected. No history of strain or injury was elicited; at the *post-mortem* examination the mediastinum was found full of extravasated blood and the left pleura contained three pints of it. That the rupture occurred in two stages is clear from the fact that, microscopically, the termination of the rent in the inner tunics is seen to be undergoing repair.

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THREE CASES OF GASTRIC CARCINOMA PRESENTING UNUSUAL FEATURES.

BY

C. E. S. JACKSON, F.R.C.S.ENG.,

SURGEON, WEST NORFOLK HOSPITAL, KING'S LYNN.

THE following cases of carcinoma of the stomach appear to be worthy of record in view of the anomalous symptoms they presented.

1. *Simulating Chronic Intestinal Stasis.*

A man, aged 54, was sent to me for suggestions as to treatment for chronic constipation. He was a thin but muscular man, who gave a history of very severe constipation of twelve months' duration, and of failing vision for the same length of time. His appetite was good and he had only vomited twice—once three weeks before and once seven days before my examination. He had had no pain after food, no vomiting of blood, nor melaena.

On examination of his abdomen I found no distension nor tumour, nor was there any tenderness to be detected, but there was a suspicion of visible gastric peristalsis, and this was confirmed at a later examination. All further examination was negative. I referred him to an oculist, who reported early atrophy of both optic discs, and after exclusion of pituitary tumour he suggested that the condition might be due to the absorption of toxins from his stomach. A neurologist, however, put down the condition of the optic discs to early tabes dorsalis. A test meal showed the absence of free hydrochloric acid. *X* rays showed that there was marked dilatation and hypertrophy of the stomach, which was not completely emptied for twenty-four hours after ingestion of the bismuth meal. A diagnosis of pyloric obstruction, probably due to a healed ulcer, was made. At operation a tumour was found, involving the greater curvature near the pylorus (microscopical examination later proved it to be columnar carcinoma). The pylorus admitted the tip of the little finger easily. There were no enlarged glands to be felt, nor was there any other evidence that the growth had extended beyond the stomach. Partial gastrectomy was performed by the posterior Polya method, and the patient left hospital on the twenty-first day. His constipation immediately disappeared, he put on weight, and ten months after the operation he informs me that his vision has improved and that his condition is in all respects satisfactory.

2. *Simulating Gall Stones.*

A man, aged 52, with the diagnosis of gall stones. He gave a history of discomfort after food for several years, but had had no real pain after food and had never vomited until six weeks before I saw him, when he was seized with agonizing pain in the right hypochondrium, with vomiting. This pain subsided, and twenty-four hours later he became slightly jaundiced. He had had two other almost exactly similar attacks before seeing me, and in every instance these attacks occurred in the evening.

On examination I found him to be a well nourished man of healthy appearance. The abdomen moved well on respiration; no tumour was felt, but there was marked tenderness over the tip of the ninth costal cartilage, and this tenderness was accentuated at the end of inspiration. At operation a well marked carcinoma of the pylorus was found. This was adherent to the neck of the gall bladder and was separated from it with some difficulty. The gall bladder contained no stones, and its wall showed no gross pathological change. Partial gastrectomy was performed by the anterior Polya method. As there was considerable oozing from the region of the neck of the gall bladder a small drain was left in for twenty-four hours. The patient developed a slight duodenal fistula on the ninth day, which healed within a few days, and the man was discharged in a satisfactory condition on the thirty-seventh day. He has put on weight since operation, his paroxysmal attacks have disappeared, but he complains of pain in the left hypochondrium, particularly if he becomes constipated. Presumably this pain is due to pressure upon the transverse colon by the anastomosis.

3. *Simulating Acute Intestinal Obstruction.*

A woman, aged 68, came under my care with the following history. The day before admission to hospital she suddenly became ill with acute abdominal pain, vomiting, and distension. Her doctor ordered enemata without effect, and an immediate operation was advised, but this was refused. He therefore administered morphine and next day she came under my care. She was a thin anaemic woman and looked acutely ill. She informed me that her previous health had been good, but that for the last year she had been losing weight and her appetite had become poor. She complained of intense abdominal pain, chiefly in the right hypochondrium, and she vomited half a pint of dark material during my examination. Her pulse was 100 and of fair quality. The abdomen showed extreme distension, especially in its lower half, the upper abdomen being comparatively flat. Rigidity was present in the right hypochondrium, and on deep palpation a tender tumour could be felt. This did not move on respiration, but on account of its rigidity its outline could not be felt. The stomach appeared not to be markedly dilated, but splashing was easily elicited. No gastric nor intestinal peristalsis was seen. A turpentine enema produced a large passage of flatus, the distension completely disappeared, and in twenty-four hours the patient's condition had greatly improved, and all vomiting had ceased. Forty-eight hours after admission she suddenly collapsed and died. At the *post-mortem* examination a huge carcinoma of the pyloric end of the stomach was found. The stomach was markedly dilated and was full of fresh blood, which came from the splenic artery, into which the growth had ulcerated. There was no stricture nor other lesion of the intestinal tract.

These cases illustrate the difficulty of diagnosis in many cases of gastric carcinoma, and demonstrate the importance of radiological examination of the alimentary tract in obscure cases of abdominal disease. Early diagnosis of gastric carcinoma is of paramount importance. In its early stages it is very amenable to surgical treatment, while the last stages of the condition when left without operation are, alas! often terrible to the patients and very distressing to those around them, while recurrence after gastrectomy in many cases causes death from asthenia with slight or no suffering. Carcinoma of the stomach appears to be on the increase. It is a very protean disease, and from the point of view of diagnosis the cases may be divided into three classes:

1. Those with symptoms of gastric disorder—often labelled dyspepsia or gastritis until too late.
2. Those with signs of malignant disease in which the site is not discoverable—for example, cases which are at first diagnosed as pernicious anaemia, Addison's disease, etc.
3. Anomalous cases, three of which are described above.

Memoranda:

MEDICAL, SURGICAL, OBSTETRICAL.

ANTISTREPTOCOCCUS SERUM IN ERYTHEMA NODOSUM.

ERYTHEMA NODOSUM is most commonly described as a rheumatic affection, and the treatment in the many and various books I have consulted is invariably some preparation of salicylic acid. The prognosis as regards recovery is of course good, but the usual duration is about five or six weeks and appears to be almost uninfluenced by the usual treatment; recovery is followed by prolonged convalescence in which a rather intractable anaemia is conspicuous.

About three years ago I had two cases. The first was a woman, aged 48, who had a quinsy; about a week or ten days after its commencement, and when the throat was practically well, typical erythema nodosum developed; this lasted about five or six weeks; recovery was slow and more or less uninfluenced by the usual treatment. The second was a man of 28 who had follicular tonsillitis, followed in about ten days by a typical attack of erythema nodosum. He was treated in the usual way, and recovered in about five or six weeks. In neither case was there any history of rheumatism, and in both cases convalescence was prolonged. These two cases occurred about the same time,

and I was so impressed by the fact that a septic tonsillitis and a quinsy respectively were followed by a typical attack of erythema nodosum that I determined to try injecting antistreptococcus serum at the next opportunity. I had to wait more than two years before it occurred.

Case 1.—A girl, aged 14, was admitted into hospital under my care suffering from typical erythema nodosum. She had a not very definite history of subacute rheumatism and of a slight sore throat within ten days preceding her admission. There was no cardiac lesion nor any evidence of other constitutional trouble. She was immediately given 10 c.cm. of polyvalent antistreptococcus serum, and in forty-eight hours the improvement was most marked. A further dose of 10 c.cm. was given, and in thirty-six hours the erythema had entirely cleared up, leaving only the usual discoloration. The subsequent or accompanying anaemia rapidly improved under iron, and the girl was quite well in between two and three weeks.

Case 2.—A woman, aged 51, had septic tonsillitis. She gave no previous history of rheumatism; eight days after the commencement of the tonsillitis, and when the latter had cleared up, typical erythema nodosum developed. She was given 10 c.cm. of polyvalent antistreptococcus serum, and after forty-eight hours, although she was immensely improved, a further dose of 10 c.cm. was given, and in thirty-six hours the erythema had entirely subsided, leaving only the usual discoloration. The anaemia rapidly improved and she was well and about in three weeks.

No other treatment was given, except for the anaemia, in either of these two cases. I am not claiming that antistreptococcus serum is a specific for erythema nodosum. It may be that horse serum injections would be equally efficacious and that these are simply further examples of non-specific protein therapy. The results in these two cases, however, were sufficiently remarkable to make me feel justified in recording them, in the hope that others who have cases of erythema nodosum will give the antistreptococcus serum or ordinary horse serum a trial.

A. H. CARTER, M.D., B.S.Lond.,
Physician, Wolverhampton and Staffordshire General Hospital.

THE HARVEST BUG.

A DESCRIPTION of the effects of this creature is usually omitted in ordinary textbooks, and is limited to a few lines in manuals on skin diseases. But to those who have gone for their holiday to a region infested with harvest bugs their prevention and cure becomes a matter of serious importance, as the intolerable itching they produce often quite prevents sleep, and the holiday is wasted as far as rest to the nerves is concerned.

The harvest bug is a small red object just visible to the naked eye, it is said, though I have never been able to detect it myself. It is a cousin to the acarus of scabies, and belongs to the Arachnida or spider group. Its technical name is *Leptus autumnalis*, or *Microtrombidium autumnale*, as it belongs to the family Trombidiidae. Another member of this family causes the Isutsugamushi disease, which is usually fatal in the East. When magnified it is seen to have six legs, and these and its body are covered with hairs. It penetrates the skin—probably at a hair follicle—and buries itself more or less completely therein. A glance at the magnified creature will show the intense irritation it and its hairs must produce.

It is prevalent in the country, particularly in chalky districts, in the months of August and September. Personally I have experienced it in Berkshire and North Cornwall. It swarms in the grass at the side of roads and in fields, a walk through which will lay in a stock very rapidly. In wet weather it disappears for a time, but in bright dry seasons it is at its worst. This year has been one particularly favourable to its activities. Children are tormented by it, and the more one washes the worse one suffers, probably by removing the sebaceous material from the hair follicles and facilitating its entrance. A certain immunity is acquired by those who live in infested areas, and also among visitors who have gone regularly to the same spot year by year.

Prevention.—It is well to avoid walking in long grass. The skin can be protected by daily sponging all over with infusion of quassia. It is well to use carbolic soap for the body. Sulphur powder dusted in the socks and underclothing is also recommended.

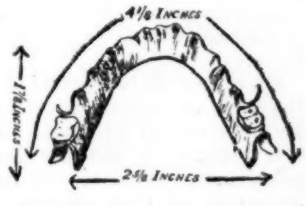
Cure.—Any mild parasiticide ointment is recommended. I have found sulphur ointment well rubbed into the spots fairly effectual, but it is a messy application, and unpleasant for constant use. A sulphur bath, with one teaspoonful of potass. sulphurata to the gallon, would probably be indicated for widely distributed bites. Jeyes' fluid, two teaspoonfuls to the pint, is recommended by many, but it is sticky and has a strong smell. Scrubb's cloudy ammonia has its advocates. The remedies that I have found produce immediate and permanent relief are two: (1) A 1 per cent. carbolic acid lotion rubbed on the spots with the fingers until it is rubbed dry and sebaceous matter expressed. This stops the itching instantly. One has a pot of the lotion, dips one's fingers in it, and rubs the affected spots. As carbolic can be absorbed by the skin too much should not be rubbed in at a time. (2) To prevent any such remote contingency as carbolic acid poisoning I have tried methylated spirit, and it appears to act effectively if applied directly the itching begins and before the parasite is protected by a scab produced by scratching, which seals its point of entrance. In that case there is a distinct papule, which must be pricked with a needle and squeezed. In cases where large surfaces are affected it would be preferable to rub in methylated rather than carbolic. In either case the rubbing in with the bare hand is indicated, and it is probable that the parasite is mechanically removed with the sebaceous material extracted by rubbing the lotion on till it dries up.

It is in the hope of offering promising suggestions for others similarly attacked that I have written this note.

Sydenham. H. B. GLADSTONE, M.D.

THE PASSING OF A LOWER DENTURE.

AT 4.15 one afternoon a clerk in the A.D.M.S. office, Madras District, swallowed, whilst at tea, his lower artificial denture. He could not extricate the denture, and as he felt that he was choking he "jumped it down." He reported the accident to the staff surgeon, who ordered him to eat a large quantity (1 lb.) of bread; this was done. At about 2 o'clock the next morning the patient was seized with severe colic, accompanied by a cold sweat and much flatulence. From this it was presumed that the denture had passed through the pylorus. He treated the matter lightly, however, and did not want to go into hospital. During the following day he was entirely free from pain of any description, and performed his ordinary duties in the office.



As the *x*-ray installation in Wellington was not in working order the patient was sent to Madras. On the journey, which took twelve hours, he experienced severe abdominal pains, which began just below the stomach. On admission into the Madras General Hospital no time was lost in taking an *x*-ray photograph, but before the result of this could be ascertained the patient was seized with most violent pains and asked to use a commode. At 11 a.m., after a great deal of exertion, he passed the denture per rectum. During the passage of this foreign body through the rectum he was in a state of collapse, and was attended to by the medical officer present. He was kept under observation for forty-eight hours, but after the first two hours which followed the passing of the denture no ill effects or complications were observed.

The total time this artificial denture took to pass through the body was sixty-six hours and fifty minutes.

W. G. PRIDMORE,
Colonel, I.M.S.
Wellington, S. India.

DIAPHRAGMATIC HERNIA OF THE NEWBORN.

A PRIMIPARA, aged 42, recently gave birth to a male weighing 8 lb. The child died three hours after birth. I had used forceps (the mother was small), and the fear of intracranial haemorrhage was upon me. *Post-mortem* examination, however, showed a deficiency in the left side of the diaphragm, which was large enough to admit three fingers. The entire bowel, accompanied by the spleen, had herniated, and occupied the left thorax, displacing the heart to the right side of the sternum, and reducing the left lung to two small tags of tissue. The contents of the hernia could easily be reduced, but very soon returned to their thoracic lodging as the place of greatest comfort.

Perhaps the death of the newly born is not so frequently due to "excessive weakness" as midwives (and others) suppose.

G. C. ADENEY, M.B., B.S.Lond.
Broad Chalke.

Reviews.

A NEW FRENCH TREATISE ON MEDICINE.

THE volumes of the French encyclopaedia of medicine, the *Nouveau Traité de Médecine*,[1] edited by Professors ROGER, WIDAL, and TEISSIER, are appearing with fair punctuality, so that this system will escape from the reproach made against some others that the early volumes are out of date before the last are published. There are to be twenty-two volumes altogether; they are not appearing in numerical order, and one of the most recent we have received is that on the salivary glands, pancreas, and peritoneum.

If it is just—and we think that on the whole it is—to gain a fair idea of the whole treatise by the perusal of a single volume, this, the fifteenth, tempts us to suggest that the title would be more correctly given as "a new treatise on French medicine." This particular volume is largely, in places almost solely, an aggregation of knowledge published in French journals by French workers in France. We cannot but feel that a treatise on medicine on so large a scale as this should embrace the observations of clinicians and scientists throughout the civilized world; it ought to contain a general survey of all the important contributions to medicine made by men and women of no matter what nationality. If all that is at present known about medicine has been discovered in France, then it is quite proper for a treatise on medicine to be a record of French work; but if this is not the case, if, in fact, other countries have contributed to the sum-total of our present knowledge, then surely it is fitting for some notice to be taken of their efforts. A similar accusation has often been made, on good grounds, against German writers; with them it has been attributed to a mixture of chauvinism and simple ignorance of the work done in other countries. But it is disconcerting to find the same obscurantist tendency in France.

Of course it is natural for a man to know more about the work of his compatriots than about that of foreigners; nevertheless, in writing a monograph on any subject—and this treatise is nothing but a series of monographs—it behoves an author to acquire a thorough knowledge of the literature on that subject. The only excuse he can have for neglecting this duty is that he personally has some contribution to make of such paramount importance that all previous work on the subject pales into insignificance beside it. We do not wish to be unduly severe. The present volume appears to give an excellent account of the diseases of the pancreas and of the peritoneum. It certainly gives an excellent account of the current ideas which are held in France on these diseases, and for that alone it may be commended. For those who are anxious to become acquainted with these ideas we would recommend it heartily; but those who go to it hoping for a general review, catholic and impartial, of our present-day knowledge of medicine will find themselves disappointed.

The twelfth volume of the treatise concludes the section on the respiratory system. It is divided into three parts. The first, by MM. Letulle and P. Halbron, deals with pulmonary tuberculosis and with pseudo-tuberculous lesions of the lungs, such as actinomycosis, blastomycosis, and aspergillosis. The account of tuberculosis is perfectly straightforward and calls for but little comment. One statement, however, which we have noticed, seems to be rather unjust. Discussing the prognosis of the disease, the authors remark that no information is to be gained from the character of the sputum. Now, if there is one point more than another that has been clearly demonstrated both in America and in this country, it is that the disappearance of tubercle bacilli from the sputum is of very favourable significance. It is found that the after-lifetime of patients whose sputum has under the course of treatment become negative is longer than that of patients whose sputum has remained persistently positive. To ignore this, founded as it is on evidence which has been very carefully collected, seems to be unwarrantable. In the second part of the book MM. P. Harvier and Marcel Pinard devote themselves to the pathology of the pleura. Under the term pathology they include etiology and diagnosis, and, to a certain extent, treatment, but the main portion is concerned with the pathogenesis and morbid anatomy of the various forms of pleurisy. Apart from the classification, which is somewhat unusual, it would be difficult to find a systematic description of pleurisy which in completeness and lucidity could rival the one before us. We congratulate the authors on their success. In the third and last part diseases of the mediastinum are considered by L. Ribadeau-Dumas. The book is furnished with ten coloured plates and several illustrations; many of these are rather below the standard to be expected of such a work, and the reproduction of some of the *x*-ray prints leaves much to be desired. It is to be regretted that there is no index.

The thirteenth volume is devoted to the affections of the mouth, pharynx, oesophagus, and stomach. It is interesting to note in connexion with the discussion so frequent in this country as to the proper treatment of adenoids that the authors state that there is but one treatment—and that surgical. In the section on oesophageal stricture they are all in favour of treatment by gradual dilatation; in support of this contention they quote the figures of Guisez, who in only 8 cases out of 135 of grave cicatricial stenosis failed to secure dilatation by this means, and had to resort to more surgical measures. In the latter two-thirds of the book Le Noir and Agasse-Lafont deal with diseases of the stomach. Instead of proceeding in the usual order from the less to the more important, they begin with the more serious affections, such as carcinoma and ulceration, and pass on to the milder ones of secretory disorders and dyspepsias. This may seem strange, but after all it is just as logical, and, as they point out, this is the natural order which one adopts in examining a patient for the first time—taking care to exclude the graver troubles before incurring the responsibility of treating him for one of the minor disorders. One cannot help but realize how far removed medicine still is from the physical sciences. Here in one of the largest treatises ever written it is found possible to give a perfectly clear account of the gravest manifestations of disease before even mentioning the simpler ones. Imagine a textbook on mathematics commencing with the differential calculus and finishing with simple equations. There is a good description of both cancer and ulceration of the stomach. To gastric therapeutics the authors devote a special chapter, in order, as they say, to avoid the reproach so frequently levelled against the French that they are neglectful of this branch of medicine. On the whole the illustrations are poor; some of the bacteriological ones might have been made thirty years ago.

[1] *Nouveau Traité de Médecine.* Published under the direction of Professors G. H. Roger, F. Widal, and P. J. Teissier. 1923. Paris: Masson et Cie. Fascicule XV, Glandes salivaires, Pancréas et Péritoine. (Roy. 8vo, pp. 568; 133 figures, 2 plates. Fr. 40.) Fascicule XII, Pathologie de l'Appareil respiratoire (suite). (Roy. 8vo, pp. viii + 596; 56 figures, 10 plates. Fr. 45.) Fascicule XIII, Appareil digestif: Bouche, Pharynx, Oesophage, Estomac. (Roy. 8vo, pp. viii+810; 119 figures, 4 plates. Fr. 50.)

ANATOMY.

IN *Practical Anatomy*[2] by Professor R. J. A. BERRY of Melbourne we have presented to us the views of an experienced and successful teacher, as to the manner in which anatomy should be studied. Briefly stated these views imply that with the study of the structure of the cadaver should go, in some considerable measure, the study of the functions of the various parts in the living and even the study of pathological conditions. "Anatomy," says Professor Berry in his preface, regardless, it would seem, of strict etymology, "is a study of the living and not of the dead." That the study of function should proceed *pari passu* with that of structure we readily admit, and would point out that this has already been generally acknowledged by those responsible for the medical curriculum; but whether, for instance, it is the province of the anatomist to describe in even the most cursory fashion the functions of the liver and spleen is a matter upon which we confess we are

[2] *Practical Anatomy.* By Professor R. J. A. Berry, M.D., F.R.C.S. Second, revised and illustrated edition. Three volumes. Melbourne, Sydney, Adelaide, and Brisbane: Robertson and Mullen's, Limited; London: H. K. Lewis and Co., Ltd. 1922. (Demy 8vo, pp. 1507; 67 illustrations.)

not convinced. Still more questionable do we consider the policy of studying pathological conditions, unless in so far as they may be dependent upon anatomical considerations, until a knowledge of the structure and functions of the normal body has been thoroughly acquired. Statements that "disease of the clavicle is not uncommon in general infections such as syphilis and tuberculosis" and that "primary carcinomatous involvement of the body of the uterus is much less common than carcinoma of the cervix," where they are not meaningless to the medical student in his second year, can only in our opinion tend to distract his attention from the work in hand. If it be answered that these passages are intended for the senior student who has made some progress in the study of pathology, we think it would have been well to have said so and to have made use, in the printing, of a distinctive type. It is largely through interpolations of this character, added to the fact that the author's style is not concise, that the work is expanded into no fewer than four volumes—for the third volume is in two parts separately bound—despite the fact that the illustrations are reduced to a minimum. The character of the illustrations varies. In the volumes concerned with the limbs and with the head and neck apart from the central nervous system, full use has been made of the well known lithographs by Ellis and Ford published in 1867. The productions of these plates—necessarily reduced in size, and, further, devoid of colour—are, however, in our opinion, unsatisfactory, particularly as regards detail, and do not reach the standard set by other anatomical drawings of the present day. In the volume concerned with the thorax and abdomen the illustrations are largely in the form of vertical and horizontal sections or of "pointed" photographs of dissections taken, we believe, from the author's *Clinical Atlas of Sectional and Topographical Anatomy*. Special and meticulous attention is paid to the exact localization of various structures, but as the data upon which this localization has been made have been obtained in most cases from a study of the cadaver, it is somewhat doubtful how far the statements and figures are strictly applicable to the living. In the volume concerned with the central nervous system still another method of illustration has been adopted—that of schematic figures, of which some are of a crudeness which is almost mediaeval. An attempt is made to meet the deficiency in illustrations by placing in the margins of the text references to appropriate figures to be found in Spalteholz's and in Toldt's atlases. The text is on the whole singularly accurate and full, containing information not usually found in works of this class. There are, however, occasional lapses—as, for example, when the lymph glands of the axilla are divided into axillary (*sic*), subscapular, and pectoral—and certain ambiguities, as when we read that the saphenous nerve accompanies the great saphenous vein ventral (*sic*) to the medial malleolus. The nomenclature adopted throughout the book is that known as the B.N.A., and we are in consequence offended by seeing "hilum," the abbreviated form of nihilum, consistently spelt "hilus," and by being treated to un-English methods of description such as that "the transverse colon is in contact cranially with the liver and gall bladder."

In *Topographisch-anatomische Sezierübungen*[3] Dr. FRANZ KISS of Ofenpest extends and elaborates that method of teaching anatomy which is known in this country as that of "window dissections." The limbs and parts of the head and neck and trunk are divided into forty so-called regions sharply but arbitrarily defined and of variable size. The skin over each region is removed and a dissection strictly confined to the limits of the area is performed. The structures are thus exposed with the minimum amount of disturbance and derangement, being retained in their original position and with their original relationships. The dissections are then photographed, and from the photographs drawings are subsequently made, the great majority of these having the muscles, arteries, veins, and nerves shown in distinctive colours. With each figure is an account of the various structures displayed. There are no fewer than sixty-five figures in seventy-seven pages, so that the book is of the nature of an atlas. The dissections have been judiciously selected and are reproduced in an admirably clear and accurate manner. If there is any fault to be found it is that they do not include dissections of the interior of the cranium, abdomen, and pelvis, but these, we gather from the preface, have been figured and described in another volume previously published. The book will be found useful not only to the medical student who reads German, but perhaps as much to him who wishes to learn to read German scientific literature and who is in search of an easy and time-saving method.

Anatomie Comparative[4] by Professor J. CHAINE is a small octavo volume of 276 pages entirely lacking in illustrations. The author deals with the subject on broad general lines, discussing such matters as the importance and fascination of the subject (here he becomes almost lyrical), its relation to morphology, histology, embryology, palaeontology, and teratology, the methods applicable to its study, and finally, and at considerable length, the vexed question of anatomical nomenclature, upon which few anatomists seem ever able to agree. The book possesses an interest which is historical and philosophical rather than scientific. It is written with both enthusiasm and eloquence.

A PHARMACOLOGICAL CYCLOPAEDIA.

THE handbook of experimental pharmacology[5] edited by Professor A. HEFFTER is much the most comprehensive treatise on pharmacology that has yet been produced. It is to be completed in three volumes; the first part of the second volume was published three years ago, the first volume has just appeared, and the remaining one and a half volumes are said to be in course of preparation. The work is to consist of a series of monographs, and the first volume contains twenty-one articles from twelve different authors resident in Switzerland, Germany, Denmark, England, and the United States.

The object of the editor is to give a practically complete summary of the pharmacological research performed upon the various drugs described. It is thus essentially a book of reference, and as such should prove valuable to all interested in pharmacological research, for it contains many thousands of references, and affords a very easy means of discovering what knowledge is available concerning the action of any particular drug. The first article is by Professor J. Bock and deals with carbon monoxide gas. A special feature of this article is an excellent account of the work done to determine the proportion of carboxyhaemoglobin which is formed when haemoglobin is exposed to mixtures of oxygen and carbon monoxide. This work is of great practical importance in connexion with the determination of the blood volume by the carbon monoxide method.

Professor M. Kochmann of Halle contributes a series of articles, occupying nearly 350 pages, on the narcotics of the aliphatic series. The articles are, of course, written from the standpoint of experimental pharmacology rather than therapeutics, but the writer does not in every case seem acquainted with some of the more important recent work. For example, no mention is made in the article on chloroform of the work of Dr. Goodman Levy, who showed that the sudden death in the early stages of chloroform anaesthesia was probably due to ventricular fibrillation, and that adrenaline could play an important part in facilitating the onset of this condition. Again, very little is said regarding the action of ether in producing irritation of the bronchial mucosa. Professor P. Trendelenburg gives an account of the actions of ammonia and of various ammonia derivatives, including choline and its derivatives. Professor A. R. Cushny contributes an excellent article on the nitrites, and Professor Reid Hunt describes the action of the cyanides.

Most of the rest of the volume is occupied with descriptions of the actions of a selection of aromatic compounds.

[3] *Topographisch-anatomische Sezierübungen.* Von Dr. Franz Kiss. München: J. F. Lehmann. 1922. (Roy. 8vo, pp. 83; 65 figures.)

[4] *Anatomie Comparative.* By Professor J. Chaine. Paris: J. B. Baillière et Fils. 1922. (Post 8vo, pp. vii+275. Fr. 14.)

[5] *Handbuch der experimentellen Pharmakologie.* Written by various authors; edited by A. Heffter. Vol. I. Berlin: Julius Springer. 1923. (Sup. roy. 8vo. pp. 1296; 127 figures, 2 coloured plates. 46s. 8d.)

These articles are written by Professors E. Rohde, A. Ellinger, G. Joachimoglu, and R. Gottlieb. The actions of a very large number of substances are set out. Finally, Professor H. Führer gives a description of the pharmacological actions of the organic dyes, substances which are of importance as internal antiseptics, and have been studied chiefly from that point of view. Information as to the action of these dyes upon the host is consequently very scattered and rather difficult to obtain; hence this article is of especial value, as in it this scattered information is collected.

As we have already stated, the work will be valuable to all those engaged in pharmacological research, but from this point of view it is regrettable that the volume before us has no index. Presumably it is intended to index the work as a whole, but as it is three years since the work began to appear, and the date of its completion appears to be rather uncertain, it would have been wiser to index the volumes separately. We believe that the work was planned before the war and that its production was hindered by the war. This will account for the fact that some of the articles are not up to date. It is impossible in practice to get a whole series of monographs written and finished simultaneously, and this disadvantage is inherent in these large productions, for by the time the whole is ready many of the parts are already out of date. This is, of course, a serious argument in favour of the production of a series of separate monographs, rather than of large volumes such as that under review. Since, however, no such monographs on pharmacology exist, those interested in the experimental evidence as to the action of drugs will find Professor Heffter's handbook useful.

MINOR SURGERY.

THE fact that the ninth edition of WHARTON'S *Minor Surgery*[6] has appeared is evidence that it has filled a useful place in surgical literature. As the title implies, the intention of the author has been to describe the various manipulations and procedures which have come to be termed minor surgery; it therefore includes descriptions of bandaging, of asepsis and antisepsis, fractures and dislocations, and such emergency operations as the ligature of the larger arteries and the minor amputations. One part is devoted to the description of "minor surgery," and it deals with a wide variety of subjects, from blood transfusion to trusses.

The section which describes bandaging is particularly good: it is an exceedingly difficult thing to write a concise yet intelligible description of how a bandage is applied, and the author has succeeded admirably. The descriptive terms of "Burton's bandage" and "Gibson's bandage" will be new to most readers in this country; they apparently figure in American methods, but they are merely slight modifications of the old-fashioned trefoil.

The author recommends that in applying a plaster-of-Paris dressing alternate layers of loose fabric and moist plaster should be applied; this is neither a neat nor a satisfactory method. "Tents" are described as rolls of conical shape employed to keep wounds open and to facilitate the escape of discharge; this is not the commonly accepted definition. With the exception, however, of certain minor details of this description, the matter is excellent, and a great variety of interesting and useful information is given.

We have been specially attracted by the section in which the author deals with transfusion of blood. This procedure is now in such general use and it is so often employed in an emergency that its inclusion in a work of this description is very proper. An excellent description is given of the process—the details of "grouping" are clearly explained, and the various methods are fully explained and illustrated. There is scope for considerable criticism, however, in regard to the description of the intravenous infusion of saline solution. Normal saline is said to contain 6 to 9 per cent. of sterilized sodium chloride. Our main objection, however, is to the benefits which are claimed for this method of treatment; the consensus of opinion is that it has great disadvantages, and it is regrettable that gum infusions have not been mentioned.

A very useful section deals with enemata, but we are surprised that the author has omitted to describe the method of the "molasses enema." The chapters dealing with ligature of vessels and with fractures are good, though they contain nothing original. A considerable amount of information can be gained from the perusal of this volume, and we feel confident that it will continue to have a wide circulation as a compendium of minor surgical methods.

[6] *Minor Surgery, including Bandaging.* By H. R. Wharton, M.D. Ninth edition, thoroughly revised. London: Baillière, Tindall, and Cox. (Demy 8vo, pp. xii+647; 450 figures. 18s. net.)

SPINAL PUNCTURE.

DR. BONOLA'S book on spinal puncture and the cerebro-spinal fluid[7] is mainly a practical manual dealing with the operation and with the chemical, cytological, and bacteriological examination of the fluid. It also contains chapters on the anatomy of the ependyma and choroid plexuses, and on the alterations met with in the cerebro-spinal fluid in various diseases. The view that the choroid plexuses have a secretory function is supported by a histological study of the villi, which are shown to possess an epithelium differing from that of the general ependyma and containing globules which are held to be secretory products. The absorptive function of the plexuses and the experimental proofs of its existence, together with the so-called lymphatic circulation, receive due consideration.

The general technique of spinal puncture is described, with special details relative to the cervical, dorsal, and lumbar varieties, and to the difficulties incident to the operation. In the event of the fluid withdrawn containing blood, the author recommends, as a means of distinguishing the source of the latter, that the fluid be received into three test tubes; if the coloration in all three is of the same depth the haemorrhage is pathological, if it varies the haemorrhage is due to the operation. This test, however, is inapplicable if blood is present in large amount. In the chapters on the chemical, cytological, and bacteriological examination of the cerebro-spinal fluid the standard tests are given with clear directions for their application and for the preparation of the various solutions used. A chapter is given to a description of the Wassermann and Sachs-Georgi reactions, together with those of Boveri and Lange. In estimating the value of the Wassermann reaction the author states that a positive result, in the hands of an expert, obtained from the serum of a patient not suffering from an acute infection indicates syphilis, although it is not absolutely diagnostic. Carried out, however, with cerebro-spinal fluid the value of the reaction may be considered almost absolute. A negative result in this case is, however, of no value, since the reaction is often positive with the blood and negative with the cerebro-spinal fluid. Among the special applications of spinal puncture an account is given of its employment in spinal anaesthesia, in cases of cerebral tumour, and in the direct application of medicaments, more especially in tetanus and cerebro-spinal meningitis. In a final chapter descriptions are given of the changes in the cerebro-spinal fluid characterizing the various diseases of the central nervous system.

[7] *La Rachicentesi ed Il liquido Cefalo-Rachidiano.* By F. Bonola. Bologna: L. Cappelli. 1922. (Sup. roy. 8vo, pp. 190. L. 12.00.)

THE COLLECTED WORKS OF PASTEUR.

WE have already referred on more than one occasion to the fine edition of the collected works of Pasteur which is being issued under the editorship of his grandson, DR. VALLERY-RADOT, of the Faculty of Medicine, Paris.[8] It is a library edition, in large octavo, and Pasteur's own text has been followed except that obvious printers' errors have been corrected. The bibliographical references have been verified and, where necessary, corrected or completed. When Pasteur published a similar paper in several periodicals each version is given or variations are indicated in footnotes.

[8] *Oeuvres de Pasteur.* Collected by Dr. Pasteur Vallery-Radot, Médecin des Hôpitaux de Paris. Paris: Masson et Cie. 1922. (Jésus 8vo. Tome i, pp. 480. Fr. 50. Tome ii, pp. 660. Fr. 65.)

The editor has also added a number of notes of his own, giving additional references or explanations. So far two volumes have reached us; each volume will be sold separately, but subscriptions are invited by the publishers to the whole series, which will be completed in seven volumes. The subtitle of the first volume is *Dissymmétrie moléculaire;* the well known portrait of Pasteur in his laboratory painted in 1889 by A. Edelfelt forms a frontispiece, and all the illustrations in the original papers are reproduced. The second volume is entitled *Fermentations et générations dites spontanées* and indicates how from the investigation of crystallography and molecular chemistry Pasteur was led on to the study of ferments, which he began in 1855. In this volume again all the illustrations in the original papers are reproduced. Pasteur has many monuments, but this collected edition of his own works will form his best.

GUY'S HOSPITAL REPORTS.

THE third quarterly instalment of this year's volume of the *Guy's Hospital Reports*,[9] though of the usual size, contains four papers only, two of considerable length and two quite short. In his study of the Guy's Hospital cases of chlorosis during the last thirty years Dr. J. M. H. Campbell also collects statistics from other sources showing the reality of the widespread belief that it has become much less prevalent; thus in 1916 the number of cases was less than a quarter of that in 1903. The main cause of this diminution is the improved condition of factory life and domestic service, which thus provide more opportunities for fresh air and exercise. There are many other points of interest arising out of the analysis of the cases at Guy's Hospital, and to some of these we refer in another column. Dr. G. W. Nicholson's continuation of his "Studies on tumour formation," occupying more than fifty pages, is devoted to the consideration of the heterotopic tumours, or those consisting wholly or in part of epithelium differing fundamentally in structure from that of the cells in the organs in which they have originated—for example, a duct carcinoma of the breast lined by keratinized squamous epithelium. As in his previous studies on tumour formation, the amount of research, reading, and thought devoted to this paper is remarkable, but it must be admitted that it is not exactly light reading. It provides another nail for the coffin which the author is thoughtfully constructing for Cohnheim's theory of tumours as the result of an embryonic cell-rest, or congenital malformation in its widest sense. In referring to Driesch's Gifford lectures he neatly remarks that, while this is not the place to criticize Driesch's philosophy, even were he able to do so properly, he (Driesch) appears "to have suffered from a defect not altogether unknown in biologists, in that he knew no pathology." Of the two shorter contributions that of Gordon Covell is on the laevulose tolerance test for hepatic insufficiency and its application in certain tropical diseases; the value of this test as claimed by H. Maclean and his co-workers is confirmed, and it is shown to indicate whether or not the liver is involved in cases of amoebiasis. The other paper, by the editor, is modestly crowded into smaller type, and describes hereditary familial congenital haemorrhagic nephritis occurring in sixteen individuals in three generations.

NOTES ON BOOKS.

VOL. VII of the *Official History of Australia in the War of 1914–18*[10] deals with the Australian Infantry Force in Sinai and Palestine, and is written by Mr. H. S. GULLETT. It is, we understand, the second volume of the set in order of publication. Of how many volumes the whole work is to consist we do not know, but it seems likely that the whole publication will certainly provide the average reader with pabulum for several months. But although lengthy, this official history, if the present volume be a fair sample of the whole, may well prove a popular success. One of the many pitfalls lying in the path of a conscientious historian, and especially of the author of an official war history, is that of writing in so dry a style as to fatigue any but the most earnest students; but this defect the recorder of the doings of the Australian Light Horse in Palestine and Sinai has managed to avoid by introducing into his narrative a great deal of detail of an easily comprehended kind. Often, perhaps, it is of little importance in itself, but it supplies the pages with a human atmosphere and will certainly make the volume attractive to friends of the individuals mentioned or described in connexion with it. The medical features of the long-drawn-out campaign in a sandy, fly-ridden country receive a fair degree of attention, and we gather that the medical officers, as also officers of other branches, sometimes found difficulty in getting their own way even when that way was a great improvement on the one initially imposed on them by the Higher (British) Command. But such experience was not peculiar to the Anzacs, either in Palestine or in other areas, nor was the Higher Command always unwise in opposing ostensible progress or in consenting reluctantly, if at all, to material modifications of equipment and the like. The author cannot be aware that some improvisations that he mentions with approval and credits by inference to the ingenuity of the Australian Light Horse were already time-honoured practices elsewhere when circumstances rendered them desirable. But this is of small importance, seeing that the part played by Australia in the war was indisputably magnificent. The volume is well illustrated by maps and photographs and includes an admirable index.

Under the title of *Youth and the Race*[11] the Fourth Report of the National Birth Rate Commission, 1920–23, with the chief evidence, has been published under the editorship of the secretary, Sir JAMES MARCHANT. The inquiry was conducted by a body of forty members, of whom fourteen belonged to the medical profession, and the evidence was given by thirty-one witnesses representing psychology, education, and medicine. The report, which precedes the evidence, is divided into two parts, the first dealing with the moral education and the second with the social responsibility of the adolescent. In view of the importance of the cinematograph in relation to adolescence—an importance equal if not superior to that of the press—it is interesting to learn that a psychological inquiry on this subject is now being carried out at University College; the results, it is hoped, will be published this autumn.

The monograph on functional albuminuria and nephritis in childhood,[12] by Professor LUDWIG JEHLE, head of the children's department of the Vienna General Policlinic, is divided into four parts. The first is devoted to orthostatic lordotic albuminuria, a subject on which he is a well known authority; the second to functional nephritis, a term applied to atypical forms of lordotic albuminuria; the third to renal diseases, including acute and chronic nephritis, nephrosis, syphilis of the kidneys, paroxysmal haemoglobinuria, and tuberculosis of the kidneys; and the fourth to diseases of the urinary tract, including cystitis and pyelocystitis. A bibliography of the literature since 1912 is appended.

The small book entitled *Surgical "Don'ts" (and "Do's")*[13] is a collection of a number of articles all written in identical form by Mr. C. HAMILTON WHITEFORD of Plymouth, the first having been read before the South-Western Branch of the British Medical Association in 1910 and the latest having been published as recently as April in the current year. As a rule the advice given is supported by a brief statement of the reason why it is given and in some instances illustrations are given of the unhappy results of taking the opposite course.

A handbook on *Alcohol*,[14] by Mr. C. SIMMONDS, has been added to Pitman's series of books on common commodities and industries. It is written in the easy style appropriate to lectures, and there is hardly a question regarding the sources, the mode of manufacture, or the uses of alcohol which is not answered sufficiently to satisfy scientific and technical as well as popular readers.

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[9] *Guy's Hospital Reports*, Vol. LXXIII (Vol. iii, Fourth Series, No. 3, July, 1923). Edited by Arthur F. Hurst, M.D. London: Henry Frowde, and Hodder and Stoughton. (Pp. 247-370; 15 figures, 19 charts. Price 2 guineas, post free for volume of 4 numbers; single numbers 12s. 6d. each.)

[10] *The Official History of Australia in the War of 1914–18*. Vol. VII: Sinai and Palestine. By H. S. Gullett. Sydney, Australia: Angus and Robertson; London: British Australasian Book Store, 51, High Holborn. 1923. (Demy 8vo, pp. 844; 77 maps, 83 illustrations.)

[11] *Youth and the Race: the Development and Education of Young Citizens for Worthy Parenthood.* (Being the Fourth Report and the Evidence taken by the National Birth Rate Commission, 1920–23.) Edited by Sir James Marchant, K.B.E., LL.D. London: Kegan Paul, Trench, Trübner, and Co., Ltd.; New York: E. P. Dutton and Co. 1923. (Demy 8vo, pp. xx + 378. 15s. net.)

[12] *Die Funktionelle Albuminurie und Nephritis im Kindesalter.* By Professor Ludwig Jehle. Vienna, Leipzig, and Munich: Rikola. 1923. (Med. 8vo, pp. 63; 2 figures, 3 tables.)

[13] *Surgical "Don'ts" (and "Do's").* By C. Hamilton Whiteford, M.R.C.S., L.R.C.P. London: Harrison and Sons, Ltd. 1923. (Cr. 8vo, pp. 46. 3s. net.)

[14] *Alcohol in Commerce and Industry.* By C. Simmonds, O.B.E., B.Sc., F.I.C., F.C.S. Pitman's Common Commodities and Industries. London: Sir I. Pitman and Sons, Ltd. 1922. (Cr. 8vo, pp. x + 119; 9 illustrations. 3s. net.)

In her book entitled *How We Resist Disease*[15] Dr. JEAN BROADHURST of Columbia University aims at providing nurses and general students with some sound knowledge of the subject. Furthermore, she has endeavoured to deal with it in as simple language as possible, and anyone who has ever essayed a similar task must know how exceedingly difficult an undertaking it is. On the whole, she may be deemed to have succeeded, despite the profundity and wide field covered by doctrines concerning immunity and the preventive and curative practices founded thereon. The circumstance that the latter are of much practical interest to nurses and that they are described in considerable detail will probably commend the work to those for whom it is intended.

Dr. LUCIEN CHEINISSE'S yearbook of treatment for 1922,[16] like its two predecessors, is divided into two parts, the first containing an account of new drugs and other methods of treatment arranged according to diseases and symptoms, and the second being a review of certain therapeutic methods. To facilitate reference the subjects are arranged in both parts in alphabetical order and by the provision of a full index. Dr. Cheinisse has not only a remarkably extensive knowledge of medical literature—in addition to French he quotes English, American, German, Italian, Spanish, Dutch, and Russian authorities—but he also possesses a fine critical faculty, to which, in deference to our review of the previous volume (JOURNAL, May 6th, 1922, p. 723), he has given much freer play than before. The little volume, therefore, is very readable, and is indispensable to those who wish to keep in touch with advance in therapeutics.

Students entering on the study of organic chemistry can choose among a considerable number of textbooks, which, however, seldom achieve the same contact with the subject that is attained in books on inorganic chemistry. The conditions that determine the progress of reactions receive too little attention; from some books the student may even receive the impression that a knowledge of structural formulae is all that is essential. In CHAMBERLAIN'S *Organic Chemistry*[17] there is displayed a more perfect intimacy with the real chemistry, the knowledge of which alone will enable the worker to achieve syntheses of his own devising or understand the chemical transactions realized in the realm of biology. Obviously, much of this knowledge can only be gained through practical work, for which appropriate textbooks are required; but it is none the less important that theoretical explanations of the successes and failures of practical methods should be provided. In this direction much remains to be done by authors of elementary works, and Dr. Chamberlain's effort is a step towards that goal. The volume contains all the matter usually needed in the course for a university degree. The arrangement is satisfactory, the printing is good, and there is a serviceable index.

[15] *How We Resist Disease.* By Jean Broadhurst, Ph.D. Lippincott's Nursing Manuals. Philadelphia and London: J. B. Lippincott Company. 1923. (Demy 8vo, pp. 248; 38 figures, 4 coloured plates. 10s. 6d. net.)
[16] *L'Année Thérapeutique.* Troisième Année. 1922. By L. Cheinisse. Paris: Masson et Cie. 1923. (Imp. 16mo, pp. 208. Fr. 7.)
[17] *A Textbook of Organic Chemistry.* By J. S. Chamberlain, Ph.D. London: G. Routledge and Sons, Ltd. 1922. (Imp. 16mo, pp. xliii + 959. 16s. net.)

PREPARATIONS AND APPLIANCES.

An Infants' Food.

STUDY of the diet of infants continues to stimulate commercial production. Maltose has been represented to be of exceptional value as an additional carbohydrate in the composition of artificial food. Our attention has been directed to a product from starch consisting of maltose and dextrin prepared by Messrs. Mead Johnson and Co., of Evansville, Indiana; it is sold under the name of Dextri-Maltose and is obtainable in this country from the American Drug Supply Co., Ltd. It is put up in three forms, one being the simple product of manufacture containing about 50 per cent. of maltose, the remainder being dextrins and moisture; another consists of the same with the addition of 2 per cent. of sodium chloride; and the third contains 3 per cent. of potassium bicarbonate. Analyses made at our direction have shown that these articles agree with the composition stated on the labels and that the purity of the manufactured product is satisfactory. The proprietors inform us that they supply to medical practitioners and child-welfare institutions a number of booklets and pamphlets. These are practical and useful; they include a chart for the infant's weight, a set of cards giving directions as to dietary for infants of different ages, and a booklet called *The Bottle-fed Baby*, which is a carefully considered instruction to mothers written in easy language. This bears no advertisement and no directions for feeding are supplied with the food packages. Directions are supplied to medical attendants, who alone, we are informed, are advertised of the firm's products.

A Dried Milk.

Milkal is the trade name of a dried milk prepared for infants by the Dried Milk Dairy Products Ltd. We understand that Messrs. J. Lyons and Co., Ltd., who are the distributors, are willing to supply sample tins on request for inspection. Milkal is stated to be produced by the spray process. A sample received by us has been examined analytically at our direction and the report returned is satisfactory. It is found that the composition agrees with that stated on the label, which represents a full-cream milk. The emulsion formed with water is devoid of aggregated particles and the fat globules are hardly less fine than those of natural milk; this is evidence that destructive heating has been avoided. A bacteriological examination has also been made which showed the sample to be clean. It was not found to contain any chemical preservative.

Standard Lactose.

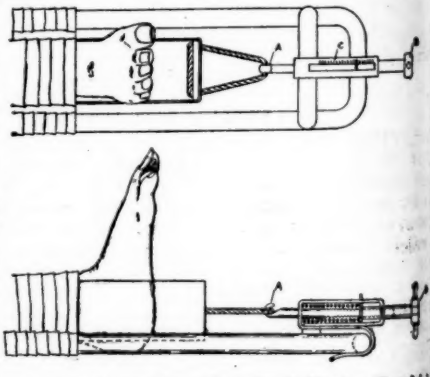
Erratic results in the culture reactions of bacteria and the study of their fermentative powers are not infrequently a source of perplexity and trouble to bacteriologists. They are usually to be traced to irregularity in the quality of the materials composing the culture medium. It is a necessity of prime importance in such work to use materials of infallible purity. In attention to this need the British Drug Houses (Graham Street, City Road, N.1) are engaging in the manufacture of a highly purified lactose. A specimen has been submitted to analytical examination at our direction and has been proved to possess the high degree of purity comprehended in the term "fine chemical." We do not doubt that the utilization of this article, which is sold under the denomination of Standard Lactose B.D.H., will prove to be of material advantage in bacteriological work.

A Laminectomy Retractor.

Mr. C. P. G. WAKELEY, F.R.C.S.Eng. (London, W.), writes: One of the difficulties in performing laminectomy is to obtain adequate retraction of the erector spinae muscles on each side. If the muscles are peeled away on either side and a self-retaining retractor inserted, an excellent view of the laminae is obtained and troublesome haemorrhage is avoided. It was with this object in view that Messrs. J. H. Montague, of 69, New Bond Street, have made to my design the laminectomy retractor here described. It consists of two stout steel blades with wide base and tapering towards the top. The inner edges of the blades have three curved hooks which are inserted under the erector spinae muscles when the retractor is closed. The extension of the retractor blades is manipulated by a quick travelling screw revolving in a telescopic steel tube. On rotating a wheel at the opposite end of the tube the blades will open to five inches. I have found the retractor a very useful instrument; the adjustment is good. The whole of it is heavily nickel-plated.

A Simplified Extension Appliance.

Mr. WM. RUFUS HARRIS (Assistant Surgeon, Gloucester Royal Infirmary) writes: The following appliance is intended for use with a Thomas's knee or arm splint or any modification of it. It obviates the use of any weights, pulleys, or uprights, and does not pin down the patient when extension is applied to a limb. Adhesive strapping is first applied to the limb in the ordinary way, the wooden stirrup having two holes instead of one. Through these holes a loop of strong blind cord is threaded. This loop is slipped on to the end of the extension rod A. The thumb-screw B is then turned until the required amount of extension is applied as shown by the indicator C, which is graduated into pounds. The appliance can be used in most conditions requiring extension, and is particularly useful in conjunction with Thomas's knee-splint for the transportation of cases of fractured femur. The appliance is made by the Leeds Surgical Supply Company, Ltd., Park Lane, Leeds.



SMALL-POX AND VACCINATION IN THE PHILIPPINES.

BY

JOHN C. McVAIL, M.D., LL.D., F.R.F.P.S.

IN the BRITISH MEDICAL JOURNAL of January 27th (pp. 158–162) I discussed in considerable detail facts and questions relating to the remarkable prevalence and fatality of small-pox in the Philippines in the years 1918–20. The Report of the Philippine Health Service for 1921, which has now been received, shows a great and gratifying diminution of small-pox throughout the archipelago, though, as was to be expected, the degree of freedom from the infection varied in different parts.

In the capital city of Manila the disease was practically absent; in the Division known as the Provinces and containing perhaps nine-tenths of the total population, there were no more than between 300 and 400 cases, and only in two parts of the Division of Mindanao and Sulu (the southern islands) was there in 1921 a continuation of the epidemic prevalence of 1920. Concerning fatality rates, however, the position has not been nearly so good; they were still very high, being set down (pp. 12–13) at fully 50 per cent. in the southern islands—592 deaths in 1,160 cases. The figure for Misamis is extraordinary, for the tabulation shows 180 cases and 180 deaths. It is disappointing that the report makes no remark on this 100 per cent. case mortality. Of the 180 cases, 52 are counted as adults and 128 as infants (p. 298), these two groups comprising the whole 180 without a single case at any intermediate age. This is unbelievable, and so also is a similar classification (p. 297) of 959 cases in Bukidnon, where 403 were adults and 556 infants. It is clear that the words "adult" and "infant" require definition here, and that much more detail is necessary for any proper representation of the facts. It appears (pp. 297–8) that none of the 180 Misamis cases were treated in hospital, and that 162 of them occurred in the first quarter of the year, 14 in the second quarter, and 4 in August, when that epidemic ended. The reader may speculate whether there has not been some extensive omission of notification of the disease in the area involved to account for every recorded case having been fatal.

Vaccination.—The Philippine reports do not generally classify small-pox deaths as vaccinated and unvaccinated, and the 180 just mentioned are not so classified. But the position as to vaccination seems to be pretty much as set forth in the annual reports for 1918–20. Though the membership of each of the six vaccinating parties appointed in 1918 for the whole islands has been reduced from twenty to ten, the total vaccinations performed in 1921 were not far short of two and a half millions. But as before, not nearly the whole of them were subsequently inspected, and not nearly the whole of the inspected vaccinations had been successful. In Manila—in this respect the worst of the three divisions—the total number of vaccinations was 138,517, but the inspections numbered only 33,666, and the negative results among them numbered 11,954. Such figures are of little or no use in assessing the vaccinal condition of a population. Even in infants who could not have been protected by previous vaccination the failures among inspected cases ranged (p. 379) from about 15 to 23 per cent. in Manila, where, if anywhere, good lymph and competent vaccinators should be available. In the Provinces the percentage of failures at all ages was 34.9 (p. 247), and in Mindanao and Sulu 49.11 (p. 302). In that Division the latest reports indicate (p. 13) that dried virus has not given a high percentage of case success.

If it be permissible without offence I would like to point out to those concerned in the preparation of these annual reports the importance of taking great care that they be in every respect accurate and reliable. The volume under notice contains various statistical discrepancies. At page 13 Dr. Vicente de Jesús, Director of Health for the Philippines, states that in 1921 there were reported in the Division of Mindanao and Sulu 1,521 small-pox cases and 1,197 deaths, but in tables at pages 274 and 293 Dr. Fajardo, Chief of the Division, gives the total small-pox deaths for the year as 591. These tables relate only to deaths, not to cases. In the Division of the Provinces Dr. de Jesús says (p. 11) that there were 336 cases of small-pox, but Dr. Hernando, Chief of the Division, says at page 187 that the cases numbered 399, and in confirmation refers to Table E, but the number given in that table is 339, not 399. Dr. de Jesús gives the number of deaths as 151 and Dr. Hernando as 128. Dr. de Jesús says (p. 9) that there was one case of small-pox in Manila, but Dr. Catanjal, Chief of the Division, says (p. 165) that there was no case. A glaring discrepancy occurs with regard to the population of the Philippines. In the previous article I endeavoured to calculate it by collation of figures from various parts of the Reports. In the present Report (p. 19) the Director of Health gives an estimate of population, the figures being for 1920. Manila is said to have had 291,498 inhabitants, the Provinces (excluding Mindanao and Sulu) 8,800,526, and Mindanao and Sulu 2,075,382—a total approximate population in 1920 of 11,165,551 for the whole of the Islands. But at page 273 Dr. Fajardo gives the population of Mindanao and Sulu at July 1st, 1921, as only 618,364, or less than one-third of the Director's figure for 1920, though Dr. Fajardo says the population has increased. My own calculation for 1920 was 542,907, which agrees fairly well with Dr. Fajardo's, allowing for an increase as between the two years. As to the Division of the Provinces, Dr. Hernando (p. 183) estimates the population for 1921 at 8,939,464, which corresponds well with the Director's figures for 1920, but Dr. Hernando makes the curious reservation that "for statistical purposes only the Christian population has been considered, for the reason that sanitary control can only be exerted over this population." Whether the heathen have raged and imagined vain things over their entire exclusion or whether they have not, it is one of the oddest details in the Report. But enough has surely been said to justify appeal to the authors of the Philippine Reports to try to achieve accuracy and concord before issuing another volume, not only for their own credit but in the interests of epidemiology; if they would publish a short table of contents as well as an index they would confer a boon on reviewers. At the end of the previous article reference was made to a published statement that the Rockefeller Foundation had already, in May, 1922, entered on a medical survey of the Philippines, and it was assumed that light would in this way be thrown on the whole subject of small-pox and vaccination in the islands. I have not heard, however, that the Foundation has as yet issued a report.

CANCER.

MINISTRY OF HEALTH MEMORANDUM.

THE Ministry of Health has issued to local authorities, for their guidance, a Memorandum on Cancer, which is reproduced, substantially in full, below.* The object of the memorandum is to summarize, in non-technical terms, present knowledge regarding the etiology and incidence of cancer, and to offer suggestions which may be useful to local health authorities in their efforts to inform public opinion on this subject.

The memorandum has been prepared by the Departmental Committee on Cancer appointed by the Minister of Health, which is composed as follows: Sir George Newman (Chairman), Mr. C. J. Bond, Sir George Buchanan, Dr. S. Monckton Copeman, Dr. Major Greenwood, Professor F. Gowland Hopkins, Professor W. S. Lazarus-Barlow, Dr. J. A. Murray, Dr. T. H. C. Stevenson, and Dr. S. Wyard, with Lieut.-Colonel A. B. Smallman as Secretary.

Apart from the appointment of this Committee, the Minister has directed the medical intelligence service of the Department to keep in touch with developments of cancer investigation, and the Department undertakes the prosecution of researches of an epidemiological and statistical character, both at home and internationally, in regard to cancer. Full and careful consideration will be given to any means by which it would appear that the Ministry, from its position as the central public health authority in England and Wales, can use the resources at its disposal to aid cancer inquiries, in co-operation with the Medical Research Council or the special cancer laboratories and research institutions.

MEMORANDUM ON CANCER.

1. *Characteristic Features and Natural Course.*

In this Memorandum the term "cancer" is applied to a group of morbid conditions known to affect man and lower animals in all parts of the civilized world. The members of this group differ widely in naked eye and microscopical appearances. They also differ in the age of the individuals affected, in the rapidity with

* Circular 426. Copies may be purchased through any bookseller or directly from H.M. Stationery Office. Price 1d. net.

which they run their course and in their liability to become generalized throughout the body. But they all agree in that (i) they are manifestations of disordered overgrowth of some tissue of the body, (ii) they are at first local, (iii) they are not encapsuled, (iv) they progressively invade the deeper parts, (v) they readily undergo degenerative changes, (vi) they tend to become disseminated to distant parts of the body, (vii) they lead sooner or later to the death of the individual in the vast majority of cases.

From the standpoint of preventive medicine and public health administration, there is a conspicuous contrast between cancer and groups of other morbid conditions, such as the acute infectious diseases or tuberculosis, for which the fundamental principles of prevention are well established. From the mass of medical evidence and literature on cancer, old and new, we have an extensive knowledge of its natural course and pathological anatomy; from mortality and other records we know much about its occurrence and geographical distribution. But knowledge useful for its prevention is still far from complete. The root cause or causes on which the occurrence of cancer depends remain obscure. We do not possess any specific means of producing immunity against cancer, as we have against small-pox, nor have we any specific means of curing the disease analogous to quinine for malaria or arsenobenzol compounds for syphilis. In all these directions much valuable research work has been undertaken, both within laboratories and outside them, and such research is being further pursued. Study with this object ought to receive every possible support from central and local health authorities, from those responsible for hospitals and other institutions, from voluntary agencies and from the general public.

2. *Extent of Cancer Mortality and its Increase.*

In a population of 37,885,242 persons in England and Wales in 1921, a total of 46,022 deaths were attributed to cancer. These figures imply that out of each average million persons 1,215, and out of each thousand 1.21, died of cancer. The death rate per 1,000 of the population attributed to cancer in England and Wales has gradually increased from 0.32 in 1851-60 to 1.12 in 1911-20, and 1.21 in 1921. To some extent this fourfold increase is due to the fact that a larger proportion of the population than formerly is now of those ages at which deaths from cancer commonly occur; but when full allowance has been made for this ageing of the population, the increase is from 0.33 in 1851-60 to 0.97 per 1,000 in 1911-20, and 1.01 in 1921, so that in the space of two generations the recorded mortality has trebled.

It has long been matter for discussion to what extent this increase has been due to improved diagnosis and more accurate certification of cause of death. There can be little doubt that these factors have been contributory, but unfortunately it has now to be recognized that they will not account for the whole of the recorded increase. Superficial cancers, such as those of the tongue or the female breast, were readily recognizable as such even sixty years ago, by the time death occurred. Yet in the twenty years' period 1901-21 (after making allowance for the ageing of the population) the mortality of males ascribed to cancer of the tongue has increased from 38 per million living in 1901 to 53 in 1921, and that of females from cancer of the breast from 148 in 1901 to 190 in 1921—increases of 39 and 28 per cent., respectively, in twenty years. During the same period the mortality, similarly stated, of the total population from all forms of cancer increased from 841 per million in 1901 to 1,007 in 1921, or by 20 per cent. There is only one part of the body frequently attacked by cancer, the womb, in respect of which significant increase in mortality is not recorded during these twenty years—a fact which may in some degree be attributed to the fall in the birth rate.

During this period of twenty years, from 1901 to 1921, in which cancer increased by 20 per cent., the general death rate fell by 32 per cent., that of infants by 45 per cent., and that from tuberculosis by 38 per cent., while substantial declines were recorded in respect of most other causes of mortality. An increase of mortality attributed to cancer is the common experience of modern civilization.

The frequency with which different parts of the body are attacked by fatal cancer differs greatly in different countries; it may differ over a period of years even in the same country; and changes are occurring not only in respect of the parts of the body attacked by cancer, but also in regard to the ages at which deaths occur. In this country the tendency is for deaths from cancer to occur later in life than formerly, and this change has been going on, at least amongst females, for many years. The latest available returns show that the death rate from cancer is not increasing for males up to 45 years of age, and for females up to 60. The most rapid increase is occurring in extreme old age.

Great differences in regard to the parts of the body attacked by cancer also exist between the sexes. The excess of deaths of females (over males) from cancer is entirely due to malignant disease of the breast and generative organs; in most other parts of the body a considerable excess is recorded for males. There is a great difference between the relative frequencies of different forms of cancer amongst married and single women. Cancer of the womb is more fatal to married and widowed, and cancer of the breast and ovary to single women. In 1911-20, for every 100 deaths of single women from cancer of the breast, there were 392 deaths of married women, for every 100 deaths of single women from cancer of the ovary there were only 272 deaths of married women, but for every 100 deaths from cancer of the uterus in the single women there were as many as 1,009 amongst the married women. During this period there were 463 deaths of married and widowed for every 100 deaths of single women, so the excess of deaths for the married is much larger than normal in the case of cancer of the womb, but smaller than normal in those of the breast and ovary. The death rates for 1911-20 corrected for age distribution are not yet available, but for the years 1911-13 we have the following figures, which are death rates per million women living corrected for age distribution:—Cancer of the womb: unmarried women 169, married and widowed 293; Cancer of the breast: unmarried women 346, married and widowed 238; Cancer of the ovary: unmarried women 60, married and widowed 31.

3. *Proclivity to Cancer.*

The large majority of people go through life, even to old age, without suffering from cancer, but the geographical and social distribution of cancer mortality shows that the risk of being attacked by cancer is one which is widely disseminated. In a broad sense, liability to cancer is not an attribute of any particular social class, profession or occupation. It is to be inferred, therefore, that the occurrence of cancer depends, to an important degree, on personal predisposing factors. There would be no advantage in detailing or summarizing studies or speculations on the nature of those factors, on the specific, general or constitutional antecedents of cancer, or on the meaning of "proclivity" to cancer. Knowledge is not far enough advanced. It is right, however, to point out that *hereditary* predisposition to cancer has not at present been proved to be of any practical importance in man; that it cannot be asserted with scientific authority that the use of any particular article of food increases the liability to cancer, or prevents it from appearing; that no known drug or preparation will prevent its appearance or cure it when present; and that no danger of cancer has been proved to result from inhabiting houses or districts in which cancer happens to have been exceptionally common. There is no evidence to show that cancer is an infectious or contagious disease.

4. *Chronic Irritation as a Determining Factor.*

One certain fact about cancer is that it frequently follows on chronic and prolonged irritation. Not all tissues, however, are equally liable in this respect. The palm of the hand, for example, in spite of its exposure to chronic irritation of all kinds, is probably never the seat of cancer. In the female breast cancer occurs far more commonly in the deeper parts of the gland than in the nipple, which is more exposed to injury. Some tissues show a special liability to develop cancer during chronic irritation, such as the skin of the face, the lips, insides of cheeks, tongue, lower part of bowel, neck of womb. Certain varieties of chronic irritation, too, are more liable to be followed by cancer than others. Thus, in the lip, long continued irritation by a clay pipe is particularly dangerous; in the tongue, irritation by a jagged tooth or badly fitting toothplate; in the womb, the chronic ulceration which may follow confinement. Again, syphilitic disease affecting the tongue or female external generative organs, or tuberculosis of skin (lupus) affecting the face, particularly if it has necessitated prolonged treatment, is liable to end in cancer. And lastly, workers in tar, such as briquette makers, workers with anilin or paraffin, chimney sweeps, and mule-spinners are apt to suffer from cancer in special parts of the body as a consequence of repeated irritation by the particular agent concerned.

This liability of cancer to follow chronic irritation of so many different types is remarkable, and leads to the supposition that beneath them all there lies some common factor—as yet unrecognized—which is fundamental to the passage of a chronic inflammatory and non-cancerous condition into one that is definitely cancerous. In one variety of cancer (rodent ulcer) the distribution of the new growth is such that it suggests a close relationship with the nerve supply of the affected part. How far this is true and how far modifications of the body itself as distinguished from the chronic irritant play a part in the ultimate production of the cancer it is impossible to say in our present state of knowledge.

5. *Prophylaxis.*

While considerations such as those in Section 3 above show how far we are from being able to say how cancer is to be avoided, those in Section 4 indicate that there are at least some provoccative causes of cancer which can be guarded against. Since cancer occurs more commonly in certain sites, it is prudent to notice and remove causes of chronic irritation in these sites. Apart altogether from cancer, people should attend to these conditions in the exercise of common care for their general health and fitness.

In this category, for example, and for reasons just given, come the removal of rough stumps of teeth or replacement of badly fitting dentures; a change of habit if pipe-smoking is found to produce soreness on the same spot of the lip or tongue; an alteration of clothing which causes irritation of particular regions of the body—for example, the breast; the avoidance of constipation and other like matters. On the same basis the possibility of establishing a chronic irritation in a region liable to cancer gives an additional reason for obtaining advice and treatment in disorders of the stomach, bowels, or womb. Finally, special precautions, the nature of which is well known to those concerned, must be adopted in certain occupations known to entail superadded and specialized risks of cancer.*

6. *Diagnosis of Cancer.*

For reasons that are indicated in the next section early diagnosis is of the greatest importance. This means not only diagnosis of the actual existence of cancer, but, even more, diagnosis of the existence of abnormal conditions that are common precursors

* Every medical practitioner attending on, or called in to visit, a patient whom he believes to be suffering from (*a*) *epitheliomatous ulceration* due to tar, pitch, bitumen, mineral oil, paraffin, or any compound, product or residue of any of these substances, or (*b*) *chrome ulceration* due to chromic acid or bichromate of potassium, sodium, or ammonium or any preparation of these substances, occurring in a factory or workshop, is required to notify the case to the Chief Inspector of Factories at the Home Office.

of cancer. Cancer itself in its early stages is almost invariably unaccompanied by pain, and is sometimes painless throughout. This painlessness of cancer in its early stages is one of its most insidious dangers, since it leads the patient to delay seeking medical advice. Were cancer as painful in its early stages as toothache, there would be far fewer of those pitiable cases in which the patient first seeks advice when the cancer has reached a stage beyond all but palliative treatment.

Early diagnosis obviously depends upon co-operation between the patient and the doctor. Medical advice should be sought at once, particularly if a tumour or lump is found in the breast, if an ulcerated condition exists on the tongue, lip or skin which does not heal in a few days, if there is persistent hoarseness, if a mole or wart shows a tendency to grow, if blood or mucus is passed with the stools, if there is bloody or offensive discharge at other than the normal monthly periods, especially at the change of life or after it has passed. Even with the greatest care and still doubtful cases occur; but only after careful medical examination can it be decided whether such conditions are or are not indicative of cancer, and those who seek advice in these circumstances are taking a wise course quite apart from cancer possibilities. An abnormality is there, and whatever it is due to, it should be treated and not nursed in secret.

7. *Treatment.*

If a person has not recognized that something is wrong—and such cases occur—nothing more can be said. But very many persons are aware that something is wrong, fear it may be cancer and put off consulting a doctor because they think that if cancer be diagnosed an operation will be necessary. Quite apart from the facts that anaesthetics and antiseptics have robbed operations of many of their terrors, and that many such cases would not be cancerous at all, the chances of a patient must be better the earlier he or she comes under treatment. Most medical authorities believe that in cancer early operation affords the best chance to the patient, although they would not feel justified in stating that all risk of recurrence is necessarily removed by operation, even if undertaken in an early stage of the disease. But there is indubitable evidence that removal by operation, though ultimately followed by recurrence, enables many people to live a natural life in comfort for considerable periods, while in advanced cases such removal may relieve or prevent prolonged suffering. There are many cases, moreover, in which cancerous growths have been removed once and for all, the patient has lived for years afterwards without recurrence, and has ultimately died from an entirely different cause.

Evidence is accumulating that in some varieties of cancer, and in some situations, radium or *x*-ray treatment, or diathermy, carried out by expert medical practitioners, offers at least as good a chance to the patient as surgery, without the attendant disadvantages, and in other cases it may be tried when surgery is out of the question. *The essential point is that the patient should not postpone or delay seeking competent medical advice, and, above all, should not waste time or money by trying quack remedies which at best are useless, and at worst aggravate the disease. In any condition in which cancer is suspected, immediate and decisive action is necessary.*

The actual prospect of length of life after measures for the removal of cancer have been taken is not a matter for dogmatizing, but without question the earlier these measures are adopted the better.

8. *Local Health Authorities and Cancer Questions.*

Propaganda.—Many local authorities, on the advice of their medical officers of health, undertake invaluable "propaganda" in relation to certain diseases by means of public notices, advertisements, broadcast leaflets, lectures, cinemas, and the like. The considerations set out above show how greatly cancer differs, in regard to the applicability of these methods, from a disease such as small-pox, for which there is a sure preventive to be proclaimed, from other diseases of the infectious class where individuals must be urged to take precautions for the safety of their fellows, or from diseases such as the venereal group for which special and gratuitous treatment is provided out of the public funds, and requires to be advertised. Much caution is obviously needed in announcements to the public on cancer in order to avoid overstatement, the making of promises which are not warranted by evidence, or the production of needless and mischievous apprehension of cancer. If all this is realized, knowledge of some of the main facts of cancer (negative as well as positive) may usually be spread through the ordinary agencies of public health departments, notably by instruction at welfare centres, by midwives and maternity nurses, and by social welfare workers. It need hardly be added that it is important for the medical officer of health in advising on these matters to enlist the counsel and assistance of other medical men, whether specialists or general practitioners, in his area.

Facilities for Diagnosis and Treatment.—It is not contemplated or suggested that there should be established throughout the country a public cancer service, analogous to the services for tuberculosis or venereal diseases, or that for treating acute infectious diseases. Even if such a service were considered desirable, it would be out of the question until other matters, such as the improvement of undergraduate and post-graduate medical education in cancer diagnosis and treatment, have been further developed. But public health authorities, insurance committees, boards of guardians or other public bodies concerned should not feel discouraged from individual action within the competence of these bodies from assisting in securing better facilities for diagnosis or more effective treatment of cancer in the areas or institutions under their jurisdiction. It has, for example, been suggested that local authorities, in conjunction with the local representative bodies of the medical profession in suitable areas (acting through a special cancer committee or otherwise), might periodically undertake a review of such questions as the following, considering in each instance whether steps could and should be taken to meet the requirements of the area and the medical profession within it, and enlisting the help of all who are likely to be of assistance:

1. Improving the local facilities for clinical consultations and for pathological examinations;
2. Improving the local facilities for cancer treatment (operative, or provision of *x*-ray and radium apparatus) and considering the adequacy of arrangements for this purpose at hospitals, local institutions, etc., which serve the area;
3. Improving the facilities for transport of patients;
4. Arranging locally for post-graduate demonstrations, lectures, or courses on cancer for medical men practising in the area;
5. Arranging locally for the education of the public.

Should such local medical consideration of cancer problems lead to applications for the assistance or co-operation of public health authorities as well as of voluntary agencies and individuals, the Minister is confident that these applications will be considered practically and sympathetically by those to whom they are addressed. The Department will be glad at any time to receive communications on the matters above outlined in cases in which it would appear that its action would be helpful or its knowledge of local progress in dealing with cancer questions might be increased.

THE HEALTH OF LONDON.

OUR issue of August 4th contained a preliminary notice of Sir William Hamer's Report for 1922, and we proceed now to refer to it in more detail.

Vital Statistics.

The taking of the census, not in April, but in fine weather at a week-end in June, when many residents were out of London, led the Registrar-General to redistribute the census population of the country, with the result that instead of showing a decrease in London, as the uncorrected figures would have done, there is a slight increase—from 4,521,685 on April 3rd, 1911, to 4,524,000 on June 20th. The age constitution has changed, the balance of effect between a lowered birth rate on the one hand and a lowered infant mortality rate on the other being that whilst in London in 1911 there were 901,056 children under 10 years old, there were only 775,898 in 1921. In the population over 10, the increase has been predominantly in females, 82,906, against only 5,090 in males, the effect of the great war. The death rate of 13.5, when analysed into periods of life, shows a record low figure under 1 year of age, but, as compared with the previous year, a notable increase from 1 to 5 years due to whooping-cough and measles, and an increase also in every life period from 20 years upwards, attributable largely to the winter epidemic of influenza. Infant mortality has been strikingly low in the past four years, the rates being 85, 76, 81, and 75 per 1,000 births, the chief factor being reduced prevalence of diarrhoea and enteritis. In addition, deaths from prematurity and congenital defects show a remarkable fall in the past three years, a fall not attributable to low summer temperature. Sir William Hamer holds that better midwifery practice, maternity benefit, better attention to expectant and nursing mothers, decrease in drunkenness, more resort to maternity institutions, and improvement in elementary education under the Act of 1870 have all had their share in this most desirable result. In the individual London boroughs, it is surprising that Kensington had the next highest infant mortality rate to Shoreditch in 1921, and attention is called to Dr. Fenton's report for that year, in which he notes that respiratory and diarrhoeal mortality was prominent in converted mews and tenement houses; in addition, the illegitimate birth rate was high in Kensington.

Small-pox.

Passing on to the statistics of infectious disease, the medical officer deals first with small-pox. Most of the cases occurred in a public institution where vaccination had fallen into abeyance. The total in the year, all in the latter half of it, was 65, and the type was severe, probably from the Continent, London having so far escaped the mild disease from the provinces, where it is so costly to business and commerce. Of the 65 London cases, in 5 vaccination was doubtful, there being no sign of it; 3 of the 5 died and 2 recovered. Of 14 unvaccinated 7 died and 7 recovered. Of 46 vaccinated in infancy 10 died and 36 recovered. The three shortest intervals between primary vaccination

and attack by small-pox were 14, 16, and 16 years; the three shortest intervals between primary vaccination and fatal attack were 43, 44, and 49 years, the other fatal attacks in the primarily vaccinated being at ages from 58 to 73 years. Thus every outbreak of small-pox tells in its own way the value of vaccination. In October and November over 25,000 children in the Council's schools were vaccinated. Sir William Hamer states that the London outbreak of nearly 10,000 cases, which began in 1901, cost £500,000, or about £50 a case.

Tuberculosis.

The phthisis death rate in London in 1922 was 1.08 per 1,000, made up of a 1.35 male rate and 0.84 female rate. This is a little higher than in the two immediately previous years, but lower than any of the earlier rates. It is pointed out that during the war the civil population contained practically all men suffering from phthisis, those developing phthisis in army and navy being as far as possible sent back to England, the tuberculosis mortality in the British troops in France and Belgium in 1918 being only 5 per 100,000. After reference to the age incidence of the disease, the movement of population in relation to the phthisis death rate is discussed, in continuation of what was said in the previous year's report, and in relation to Dr. Greenwood's Milroy lectures, in which he considers the influence of internal migration from country to town, contributory causes being change of diet, diminished exercise, and change of atmosphere, Dr. Bulstrode's Milroy lectures of 1903 being also noted in support of the general case.

Influenza.

The epidemic of the winter of 1921-22 was dealt with in Sir William Hamer's previous report, and this year he discusses the epidemicity of the disease since 1890, as well as the question of its varied manifestations—the scarlatiniform rash which accompanied it in London and Manchester in 1920-21, and an outbreak among students at Minnesota regarded as scarlet fever, but coincident with an epidemic of influenza. There is also mention of an epidemic of 30,000 cases of dengue at Galveston, Texas, accompanied by a toxic rash, at a time when there was also widespread influenza. Sir William Hamer is a keen epidemiologist, and sees relationships between such concurrent epidemics which would give much material for exposition of his views on the whole subject of epidemiology, if only he could find time to set it all down for the benefit of medical study in general.

Enteric Fever.

The subject of typhoid fever is dealt with at considerable length. There were in the year only 264 notified cases and 45 deaths. Of 141 cases admitted to hospital, 65 were found not to be typhoid fever. Multiple cases occurred in 14 houses, the largest number in one house being six. In 181 traced cases, shellfish is mentioned in 15, fried fish in 8, other fish in 10, watercress in 6, and other food in 33. In 25 cases contact with previous cases is mentioned. Seven nurses contracted the disease. Of the 181, 47 were not typhoid. As noted in our previous article there has been for eleven years past almost complete absence of the autumnal rise of typhoid in London. By a process of exclusion the medical officer reduces the question of origin practically to fish and shellfish. The disease has left its favoured haunts of twenty years ago. Up to 1911 certain poor areas, in a population of some half-million within the classes in question, were specially infected, multiple attacks in houses were common, and children and young adults were notably numerous among the cases. Then Sir William puts the proposition that if it be assumed that infected food was sold for many years round about the beginning of the century in this population, especially about the latter part of August and in September and in early October, and if this sale was gradually restricted in the first few years of the century, and practically discontinued about 1909 and 1912, the decline of typhoid and of its autumnal rise is largely explained. Other considerations in support of this view are submitted, and finally it is pointed out that fish has been definitely incriminated in more than a dozen outbreaks. A detailed tabulation of such occurrences is contained in the report. The question between fish and shellfish is discussed, and the latter have rather fallen out of the picture, though cockles, and especially mussels, are by no means excluded. Going back over outbreaks attributed at the time to water or milk, Sir William is inclined to the view that in certain of them fish was probably the agency. Immature flat fish, generally plaice, fried but often ungutted, are ultimately found guilty in this most interesting argument. An area near the mouth of the Elbe was specially incriminated, and its disuse from 1912 tallies closely with the disappearance of the autumn typhoid rise, the danger of mines in this part of the North Sea being a deterring influence even since the end of the war, besides earlier voluntary agreements by fishermen to keep off these grounds. Sir William Hamer's whole argument is of compelling interest, and is indeed a romance of the prevention of disease.

Venereal Diseases.

The number of new cases dealt with at the hospitals in 1922 was 23,811, of which 6,809 were syphilis, 10,632 gonorrhoea, and 321 soft chancre. As compared with 1921 there is a decrease in every class—1,379 in syphilis, 77 in gonorrhoea, and 150 in soft chancres. Cases of syphilis are being earlier disinfected since the clinics were established. The total attendances were 529,003, a notable growth, showing that the ratio of attendances to new cases continues to increase. Many cases come after exposure and are found not infected. Examinations of pathological specimens have largely increased, the number from treatment centres being 75,351, besides 18,507 from private practitioners. Failure to complete treatment is not so frequent as would appear, because the definition of cure is now much more strict than formerly.

Medical Inspection of Schools.

As school medical officer Sir William Hamer's report covers the usual ground. At the beginning of the year there was considerable prevalence of infectious disease, and "prevalence of throat maladies, scarlet fever, and diphtheria followed in 1921 at the usual interval of seven years upon the preceding waves, which had culminated in 1907 and 1914." Also there was "the usual periodical measles wave," its maximum mortality (115 deaths) being attained in the fourteenth week of the year. In addition, whooping-cough was unwontedly prevalent in the early months. Unemployment was abundant, and for retrenchment's sake compulsory day continuation schools were discontinued. In the first half of the year there was a falling off in attendance at treatment centres. However, three particularly satisfactory influences were at work: (1) Notable activity in "following up," especially as to tonsils, adenoids, and teeth; (2) increased progress in the personal hygiene of children; and (3) a comprehensive review by the Board of Education of school medical inspection and treatment in London.

Of 199,812 children examined at the three statutory age groups, 75,874 required treatment of some sort, and for one reason or another there were over 90,000 additional examinations. The number of children treated was under 200,000, or less by nearly 20,000 than in 1921. In dental treatment there was a decrease of nearly 10,000, and of nearly 7,000 for ear, nose, and throat defects, owing to the steady progress made in the previous years. Reinspections numbered 178,964, and the very satisfactory percentage of 77.7 was found to have been treated.

These are the principal statistics, and it is not proposed to enter here into further details of the year's work in London, but all who are engaged in school medical inspection and treatment will find much that is interesting and important in Sir William Hamer's report. What the Board of Education says may be noted in conclusion:

"Medical inspection and treatment have secured the sympathy and interest of parents. It is satisfactory to see the large groups of mothers at inspections, keen to know what they should do for their children and prepared to pay according to their means. It is an eloquent reply to critics who urge that the school medical service tends to diminish the responsibility of the parent in the home."

So long as that represents the position, so long as parents are keenly interested, and education authorities require that they pay according to their means, the scheme will be a success; and the sense of responsibility will not be diminished but increased by the education parents receive in the upbringing of their children, and in their own financial and family duty to the new generation of whom they are the natural guardians.

British Medical Journal.

SATURDAY, SEPTEMBER 8TH, 1923.

THE SERUM DIAGNOSIS OF SYPHILIS.

THE latest of the Medical Research Council's Special Report Series[1] gives the records of three different sets of workers who have compared the results obtained from the serological examination of serum by the Wassermann reaction and those obtained from the Sigma reaction, or flocculation test, of Dreyer and Ward.[2] The specimens of blood were collected from the patients, divided into two equal portions, labelled with numbers, and sent to the laboratories, where the Wassermann and Sigma reactions were carried out respectively. Clinical notes were kept by those who collected the samples of blood, but those who performed the tests had no knowledge of the source of the specimens, and were quite ignorant as to whether the blood was taken from normal persons, from cases of syphilis, or from individuals suffering from other diseases. At the completion of the comparison the records of the results were sent to the Medical Research Council by both sets of workers, and subsequently the results of both series of tests were collated with the clinical notes. The outcome is a document of much interest and value.

Part I of the report—contributed by Professor G. Dreyer, Drs. H. K. Ward, J. McIntosh, and P. Fildes—gives the analysis of the results obtained in the comparison of the Wassermann and Sigma reactions in the same serum. In all 894 specimens of serum were examined, obtained from 571 individuals. From persons definitely suffering from treated or untreated syphilis 519 specimens were taken; 55 specimens were obtained from persons who had previously given a positive Wassermann reaction, although no definite evidence of syphilis was obtainable; 115 specimens were obtained from persons in whom there was a suspicion or possibility of syphilitic infection; and 203 specimens from persons suffering from other diseases, where there was neither admitted history, suspicion, nor detected signs of syphilis. The results reported showed that an approximately equal number of positive reactions were obtained by the Wassermann and Sigma tests in untreated cases of manifest syphilis, but that in treated cases the Sigma reaction gave a larger number of positive reactions than the Wassermann reaction. A rough correlation was found to exist between strong and weak reactions with each test, but the results of the two reactions, when expressed quantitatively, did not in all cases run parallel. In supposed non-syphilitic cases one or other of the reactions was positive on seven occasions. In four of these both reactions agreed, in three the Sigma reaction was positive and the Wassermann reaction negative, and in one the opposite result was recorded.

A description is given in the report of the technical methods employed in the performance of the reactions. The technique of the Sigma reaction tests corresponded closely with the method previously described by Dreyer and Ward; the Wassermann reactions were carried out by methods similar to those described in the Special Report Series No. 14 of the Medical Research Council.

Part II of the report—contributed by Drs. Thomas Houston, S. B. Boyd Campbell, J. A. Smyth, J. C. Rankin, and Hugo Hall, working at the Royal Victoria Hospital, Belfast—gives a comparison between the results obtained by the Wassermann test (Harrison's and Fleming's methods) and the flocculation test of Dreyer and Ward. The 1,342 samples of serums examined by these three methods showed complete or almost complete agreement. The divergences in the results of these examinations usually occurred in a serum with low Sigma reactions or a borderland serum. In a number of cases Sigma readings sufficiently high to warrant a diagnosis of active syphilis were found, while the other methods gave negative findings; and, on the other hand, negative Sigma reactions with a positive Wassermann occurred in a few cases. Repeated determinations on cases undergoing treatment showed a regular fall in the Sigma findings, and the Sigma readings persisted longer than positive findings by the other tests employed. The Sigma technique seldom or never gave a false positive in non-syphilitic serums, whereas the other methods occasionally did. These workers conclude that the Sigma findings seem sufficiently accurate for all clinical purposes, they correspond in a remarkable way to the intensity of the clinical features of the disease, and provide an interesting and valuable method of determining the progress of a case of syphilis under treatment, and the effect of various remedies on the course of the disease.

Part III of the report—contributed by Professor Adrian Stokes and Dr. J. T. Wigham, working at Trinity College, Dublin — gives an account of the results of 1,500 comparative tests done by the Wassermann reaction and Sigma reaction. 1,515 reactions on identical specimens of serum from 772 individuals gave: positive with both tests, 885; negative with both tests, 571; positive Wassermann, negative Sigma, 38; positive Sigma, negative Wassermann, 21. The discrepancies thus numbered 59 in all. By analysing them evidence was obtained permitting a conclusion in 38 out of the 59 discordant results. In 23 of these the balance of evidence was in favour of the Sigma reaction and in 15 it was in favour of the Wassermann reaction. In discussing the relative merits of these two tests the authors point out that in both reactions the technique is simple, and accurate measurements are only a question of care. When large numbers of specimens have to be examined the Wassermann reaction, as usually carried out, occupies less time and is less fatiguing than the Sigma test. On the other hand, if only a small batch of serums have to be examined, the time occupied in doing the Sigma reaction is very much reduced, and time is saved by adopting the flocculation test. The Sigma method is more economical than the Wassermann method, when once the apparatus has been obtained, since no purchase and upkeep of animals is necessary. The two disadvantages of the Sigma test are that it is more laborious when large numbers of tests have to be carried out, and that more serum is necessary than for the orthodox Wassermann technique. The chief advantages of the Sigma test are (1) that only two reagents are employed instead of five, (2) that a very great amount of information may be obtained by a quantitative expression of the results, (3) that since the reagents can be standardized comparable results can be obtained by different workers,

[1] The Serum Diagnosis of Syphilis: the Wassermann and Sigma Reactions Compared. Medical Research Council Special Report Series No. 78. H.M. Stationery Office. 1923. 5s. 6d. net.
[2] BRITISH MEDICAL JOURNAL, June 11th, 1921, p. 859.

(4) that it is very simple and inexpensive, (5) that by its routine employment it will probably be possible to make treatment less empirical and more in accordance with the requirements of individual cases.

STATISTICS AND PUBLIC HEALTH.

THE receipt of a copy of the second edition of Professor Whipple's manual on vital statistics[1] starts a train of reflections. Here is a volume of nearly 600 pages, almost wholly devoted to the illustration of statistical methods applied to the data of public health services. It has none of the general epidemiological features which would recommend such books as those of Prinzing or Sir Arthur Newsholme to the general medical reader; it displays no such mastery of modern mathematical theory as secures to Mr. Udny Yule or Professor Czuber a wide circle of readers. The outstanding merit of the book is its assumption that the medical reader will wish to acquire as practical a knowledge of this subject as he would expect to gain of any other essentially practical technique in the field of medical science. The student is told—no doubt not always quite accurately—what method he should apply to the study of a particular class of problem, and his progress is tested by real exercises. One finds such questions as these: "How would you find out what proportion of all children born have whooping-cough at some time in their lives?" "Do the statistics of infant mortality justify the continuance of the milk stations in New York City?" "Is there a higher correlation between flies and diarrhoeal diseases among children than between diarrhoeal diseases and other factors?"

One wonders, or rather one does not wonder, what sort of answers such questions would elicit from candidates for an English diploma in public health. But, in America, it has taken less than four years to exhaust an edition of such a book written, as the author says, "for students who are preparing themselves to be public health officials and for public health officials who are willing to be students." Nobody in this country could advise a student preparing himself to be a public health official to read such a book as Professor Whipple's; it would not help him to pass his D.P.H. examination. It is true that "vital statistics" are an item of the curriculum and that the General Medical Council has decreed that no less than twenty lectures shall be devoted to vital statistics and epidemiology. But since, so far as we are aware, the Council has not decreed that candidates shall be required to give practical proof that they have learned anything from the twenty lectures, the effect upon their actual statistical education will be precisely that of the reforms in the Inns of Court of sixty years ago, when the student might either pass an examination or attend lectures, but need not do both, the view being—as Bagehot said—that "to examine those who have already attended lectures would be impertinent; it would seem as if we doubted whether they had learnt from those lectures or not." In fact, in England, the serious academic study of medical and vital statistics is almost wholly confined to non-medical students. We believe that only at University College, London, is a distinct course of instruction in medical statistics offered, and that, in the last four years, it has been almost exclusively attended by non-medical undergraduate students for the B.Sc. and by non-medical post-graduates.

In America the state of affairs is different. At least two of the great universities—Johns Hopkins and Harvard—maintain whole-time professors of vital statistics, and from the department of the Johns Hopkins Professor, Dr. Raymond Pearl, have issued a long series of medico-statistical studies. If it were not for the Ministry of Health and the Medical Research Council, there would be no whole-time medical statisticians in this country—all medico-statistical research would necessarily be the leisure employment of men engaged in other fields; and neither the Ministry nor the Council can feel confident that it will be possible to maintain a succession of trained men. Yet this lack of encouragement is a serious matter, because in most branches of medicine, and in that of preventive medicine above all, the power rightly to use the statistical method, whether as an instrument of research or of critical evaluation, is a most valuable accomplishment. Indeed, the unquestionable fact that the power of the statistical method may be overestimated is an additional argument for a wider dissemination of knowledge of its strength and weakness. It is always dangerous for important knowledge to be the exclusive property of a small minority. In these days of collective and international investigations or comparisons, many of the data upon which action is based must partake of the statistical character and be adjudicated upon by methods of statistical logic.

There is a very wide difference between the standards both of material accuracy and scientific analysis reached in the presentation of data of mortality and morbidity in different countries. In many, perhaps in all, the less advanced nations, there is a need of and desire for instruction. America can offer that instruction in her universities. What do we do here? The intelligent foreigner, recognizing that it is to great Englishmen—to such as Farr and Professor Karl Pearson—that modern practical statistics owe their greatest improvements, but noting that we ourselves seem to attach little material importance to statistical knowledge, might be pardoned if he concluded that England was not the country in which to study medical statistics. Whether the new School of Hygiene can help to remove this reproach we do not know, but it is certain that a new professor, or a new army of professors, cannot change the internal situation unless it is made manifest that it pays a student to acquire a sound knowledge of medical statistics. Satisfactory teaching facilities might meet the needs of foreign or overseas post-graduates, but few of our own students will study a subject knowledge of which neither carries marks in an examination nor credit in candidatures for public appointments.

[1] *Vital Statistics: An Introduction to the Science of Demography.* By George Chandler Whipple. Second edition. New York and London: Chapman and Hall. 1923. (Pp. 579. 20s. net.)

THE NEW MINISTER OF HEALTH.

IT is unfortunate that Mr. Neville Chamberlain's very success as Minister of Health should have led to his transfer to an office generally and by tradition held to be one of the highest in the Government. It is unfortunate also that the office of Minister of Health should so frequently change hands, and Mr. Chamberlain has himself expressed his regret that he should have to leave work in which he was strongly interested before he could complete schemes he had instituted or developed. Sir William Joynson-Hicks, who has now become Minister of Health, brings to his office a reputation greatly strengthened and enlarged during the last few months. During some ten years as a private member of Parliament he interested himself particularly in air service and road transport, and

was from time to time chairman of various committees taking up branches of these subjects. In some cases they were formed by the Government and in others they were instituted by members of the House to encourage and stimulate policy. He was also frequently heard in debates on questions of social reform. When Mr. Bonar Law formed his Ministry Sir W. Joynson-Hicks was appointed Under Secretary at the Foreign Office, with responsibility for the Overseas Trade Department, but was quickly promoted to the office of Postmaster-General and was soon engaged in negotiations with the object of clearing the tangle over the broadcasting arrangements. On the formation of the Baldwin Ministry, the Premier asked him to become Financial Secretary to the Treasury to help him in carrying through the Budget. The transfer implied a compliment, inasmuch as Mr. Baldwin, having so many other duties, needed a very efficient Minister to act for him when he was obliged to be absent from the House. With the elevation of Mr. Neville Chamberlain to the Chancellorship of the Exchequer, Sir William was the natural choice for succession to the Ministry of Health. He had proved himself efficient in administration and a ready and capable debater. His extra-Parliamentary activities as a prominent member of so many organizations for the encouragement of temperance and the betterment of mankind, while they lay him under no suspicion of being an extremist, offer every encouragement that he will approach, with a regulated enthusiasm, the manifold problems that will now come before him.

ATMOSPHERIC POLLUTION.

THE Meteorological Office of the Air Ministry has issued the Eighth Report of the Advisory Committee on Atmospheric Pollution for the year ending March 31st, 1922.[1] The report deals mainly with highly technical matters, including the value and manner of use of appliances for observational and recording work, results obtained by the standard gauge, a new form of deposit gauge, a jet apparatus for the isolation and examination of atmospheric dust, besides notes on deposits obtained at Rochdale, automatic filter records, and a brief note on research on obscurity and visibility, which has been delayed by lack of a suitable laboratory. A deputation, including a representative of the Committee, waited on the Minister of Health to urge the need for modification of the law relating to smoke emission. At the deputation a proposal was brought forward which, the Committee thinks, should go a long way towards securing a reduction of smoke. It was that "instead of penalizing conspicuous individuals for making more smoke than their neighbours, we could substitute a method of encouraging those who made less than their neighbours, in the only way in which a materialist age understands encouragement," the way being "to reduce the rates for houses that make no smoke." This proposal is supported on the ground that seventy years of a system of inflicting penalties had produced little result, whereas the suggested scheme would act gradually and automatically. In that connexion the question naturally arises, and not for the first time, as to whether and if so what effort is being made to prevent atmospheric pollution from the chimneys of the new dwellings that are being built all over the country under State-subsidized schemes for workmen's houses. Where such schemes are within the area of gas lighting supplies, are stoves for heating by gas being provided instead of coal grates? We trust the opportunity is being seized of establishing the beginnings of a better system than has hitherto prevailed in this old country. In the section of the report dealing with the jet apparatus for detection of atmospheric dust, an interesting reference is made to Professor Tyndall's method, which received much attention a good many years ago, of examining respired air by a powerful beam of light from an arc lamp brought to a focus in the air by means of a lens. Tyndall concluded that the air from the depths of the lungs was dust-free, but it is now found that this was an error. The jet apparatus shows that expired air during ordinary breathing contains about 70 per cent. of the dust particles which were breathed in, and in quiet breathing the air from the depths of the lungs contains 2.5 to 7 per cent., but after deep breathing over 20 per cent., inspiration being in all cases through the nose.

[1] H.M. Stationery Office; large 4to, pp. 42, with charts and diagrams. (3s. net.)

THE PASSING OF CHLOROSIS.

MEDICAL men approaching the period known as middle age cannot fail to have noticed the increasing rarity of chlorosis; so much has this change of type progressed that some medical students of to-day have never seen a case of this disease, which was once so common as to account, with dyspepsia, for a large proportion of medical out-patients. That it has diminished enormously in England and in the United States of America during the last thirty years is conclusively shown by Dr. J. M. H. Campbell[1] in the study of the cases at Guy's Hospital and by statistics from other sources, some of which, especially those coming from Sheffield, were provided by Professor Arthur Hall. As he had information to the same effect from Paris and Vienna it is probable that the change is almost world-wide, though it may not be universal. After discussing various possible factors Dr. Campbell ascribes this disappearance mainly to the improved conditions of factory life and domestic service and the better opportunities for fresh air and exercise. Lack of food containing iron may contribute to the production of chlorosis, but is not of equal importance; and, as the curves of chlorosis and of the deaths from pulmonary tuberculosis do not correspond, insufficient diet probably does not exert a powerful influence. The Guy's cases from 1888 to 1922 are analysed in many directions, and show a practically continuous but irregular decline, and although there may at times have been slight differences in the meaning of the designation "chlorosis," this factor can be held responsible for a very small part of the diminished incidence of the disease. It is commonly stated that the colour index in chlorosis is lower than in secondary anaemias, but at Guy's the changes in the colour index and in the size of the red cells were found to be exactly the same in these two conditions. Examination of the gastric contents in seven cases, nearly all by the fractional method, showed a tendency to increased secretion of acid, as contrasted with the generally diminished acidity in most other anaemias and the achlorhydria of Addison's disease. Although indigestion may persist for a long time there was no evidence of any association between chlorosis and gastric ulcer. In addition to the statistics and analysis of the Guy's cases, this paper incidentally reviews much of the literature on chlorosis, and contains thoughtful suggestions on a number of points.

[1] Campbell, J. M. H.: *Guy's Hosp. Rep.*, 1923, LXXIII, 247-297.

WORKMEN'S COMPENSATION IN FRANCE.

THE first French analogue of the Workmen's Compensation Act was passed in 1898, and the French, with their usual logic, at once set to work to frame scales of disability applicable to accidents of all kinds. Eventually a good many literary studies of the subject appeared, and among others the first edition of the *Guide pour l'Evaluation des Incapacités* by Professor Imbert of Marseilles and two colleagues. Among the many things to whose "scrapping" the late war led were numerous conceptions as to the final or economic outcome of various injuries, and this in its

turn has led to a thorough recasting of the book in its second edition.[1] It aims to provide a clear statement of the considerations that arise when a binding estimate has to be made of the incapacity arising from any and every accident or occupational disease, and to show in each case the percentages of disability which so far have been accepted as sound either by the law courts or by other authorities. The standpoint is, of course, French, and neither ideas nor the law on the subject in France are quite on all fours with their equivalents in Great Britain; nevertheless both lawyers and medical men in this country may derive from it some useful hints when specific cases are in question. In the early years following the passage of the French law there seems to have been considerable difficulty in reconciling legal and medical views concerning the results of accidents, owing in part to the medical view that no assured prognosis of the economic results of an accident was possible, and in part to a difference of opinion as to what the term "accident" meant. The legal view was that an accident meant any lesion arising from the violent and sudden action of any cause external to the body. The medical view, on the other hand, was that an accident was any sudden and unforeseen occurrence which produced a lesion or temporary or permanent functional trouble. It was the former view that eventually prevailed and its acceptance was finally imposed on the medical profession by a decision of the court of appeal in 1912. Since then legal views on the subject of compensation cases appear to have almost eliminated any consideration of accident in the common sense of that term, with the result that any lesion or disorder which can be attributed to work, however normally performed, is now regarded in France as an "accident" and as *ipso facto* entitling the individual to compensation. A further point of some interest is that French law clears the decks of all questions of contributory negligence or responsibility for an "accident." The French employer is in every case liable to pay up to half the employee's normal wage, not only to the employee himself during his life, but also in the case of his death to any persons who may have been dependent on him. The workman is urged to avoid accidents if he can by the fact that whatever may have been the cause of the accident he can in no case and whatever the degree of his resulting disability obtain more than half his previous wages. The authors refer to disability scales in use in some foreign countries and point with approval to the principle underlying one adopted by the Germans in 1920. This is that every injury shall be assigned at least two percentages in any scale of resulting disability. Hence when an injured person, although to some extent disabled, is still capable of pursuing his original occupation only the minimum allowance for his particular degree of disability is assignable. The maximum for that degree is reserved for cases in which the disability, although no greater in itself, necessitates the adoption of some other means of livelihood than that pursued by the individual previous to his injury.

[1] *Accidents du Travail: Guide pour l'Évaluation des Incapacités.* By Léon Imbert, C. Oddo, and P. Chavernac. Second edition. Paris: Masson et Cie. 1923. (Imp. 16mo, pp. 936; 96 figures. Fr. 40.)

SPIRITUAL HEALING.

IN the *Times* of August 27th there was a report of an address given in Westminster Abbey by the Rev. R. C. Griffith, vicar of St. Benedict and of St. Martin-at-Palace, Norwich, on "Spiritual healing." The address was noticed also in some other papers. The vicar stated that the spiritual healing work of the Church is a really live thing in this country. "I myself," he said, "have seen blind people see. We have seen one with a withered arm for sixteen years hanging at her side suddenly shoot it out perfectly whole. We have seen cancers disappear in twenty minutes. . . . The enemy who deliberately attack this work say that to try and encourage people to expect to be healed and then find that they are not healed is a wicked thing because the people lose their faith. That is a blasphemous lie." Mr. Griffith added that he had seen thousands of people waiting outside two little slum churches from 9 a.m. to 11.15 p.m., kneeling in the gutters and praying for those on whom hands were being laid in the two little shrines. It is not surprising, perhaps, that an address of this kind should occasionally be given by Anglican clergymen, but it is surprising that it should be given in Westminster Abbey. Before the war a Committee of Inquiry into Spiritual, Faith, and Mental Healing, consisting of clerical and medical members, used to meet at Westminster under the chairmanship of the Dean. In its report, published in 1914, the Committee stated that "they are forced to the conclusion, after the most careful inquiry, that 'Faith' or 'Spiritual' healing, like all treatment by suggestion, can be expected to be permanently effective only in cases of what are generally termed 'functional' disorders. The alleged exceptions are so disputable that they cannot be taken into account." The first signature to this report is that of Bishop Ryle, Dean of Westminster. The publicity given to such addresses is harmful for the reason which the vicar puts into the mouth of the "enemy." The person who is led to expect to be healed and then finds he is not healed, even though his religious faith be too strong to be disturbed, will be apt to lose hope. As Mr. McAdam Eccles has said in a letter to our contemporary, there should be co-operation between clergy and ministers and members of the medical profession, but the diagnosis at least should be in the hands of the doctor. We would suggest strongly to Mr. Griffith that he would be wise in making very sure of his evidence before he makes dogmatic statements with regard to cure; especially if the statements are such as may lead other sufferers to neglect early treatment by operation or otherwise. We do not for a moment deny the benefit derived in suffering from faith. Nor do we dispute the occasional happening of unexpected cure in apparently hopeless cases. The Westminster Committee proposed, after issuing its preliminary report, to direct its attention to a careful inquiry "into the evidence for cases of asserted cure by 'Spiritual' or 'mental' healing of organic or other serious disorders submitted for investigation." Unfortunately the activities of the Committee were cut short by the war; but Mr. Griffith and those among the clergy who are disposed to accept his teaching will find food for reflection in the evidence of certain faith healers who appeared before the Committee.

THE INVESTIGATION INTO DISTEMPER.

As has been previously noted in this JOURNAL, an organized attempt is being made by the *Field* Distemper Council, with the co-operation of the Medical Research Council, to discover the cause of distemper in dogs in order to arrive at the control or cure of the disease. Distemper is a disease which has puzzled pathologists for many years, and many different theories have been advanced from time to time to explain its ravages. Many observers have described a bacillus, commonly found in distempered dogs, and have looked upon it as the cause of the disease. Others, again, have regarded the bacilli so found as secondary invaders and not the causal agent of distemper, the primary infection they consider to be due to some hitherto unrecognized agent. The experimental work of Carré appears to show that the disease is due to an ultra microscopic filtrable virus. The confusion existing at present makes it desirable that the research now propose

should be begun *de novo*, and that the value of earlier experimental findings should be examined. As is shown in the first report presented to the *Field* Distemper Council by its technical research committee (signed by its chairman, Sir William Leishman), the proposed scheme of investigation has been founded on a very broad basis, and many technical difficulties have had to be overcome. The first step will be an attempt to isolate the causal agent of the disease from specially reared puppies which have been permitted to contract distemper by contact with dogs suffering from a natural infection. Should the presence of a filter-passing virus be established a whole new field of research will be opened up which will aim at the identification of the virus by modern optical methods; the determination of its resistance to temperature, light, moisture, antiseptics, etc.; attempts to cultivate the virus artificially; the study of immunity, natural and acquired, in animals; the study of complications and sequelae of distemper, their cause and their preventive treatment. In order to secure a stock of puppies free from infection and possessing no acquired immunity the stock will be bred in a compound which is being specially built in an isolated spot on the experimental farm of the Medical Research Council. The compound will be surrounded by an unclimbable fence, and inside this area special breeding kennels will be erected. The breeding and general care of the dogs will be entrusted to two trained kennel maids, who will spend practically all their time inside the compound, and so avoid the risk of carrying distemper from outside sources. A small bungalow will be erected within the compound for the accommodation of the attendants. The only regular means of entrance to the compound will be through a cleansing room built into the walls of the compound and partitioned into two parts. Persons entering the breeding compound will be required to divest themselves of their outer garments in the first room, and then proceed to the inner room, where, after bathing, they will put on special outer clothing. Similar elaborate precautions have been devised to avoid any possible infection being carried to the dogs in the feeding of the animals; the kennel maid will receive the food, which has been suitably cooked by an outside attendant, through a small service hatch, the only communication between the preparation room and inside of the compound. During the time occupied by the erection of these buildings preliminary experiments will be carried out in temporary structures which are now rapidly nearing completion. Over £4,000 has already been subscribed to meet the expenses of this research. An American committee has been formed, several members of which have been co-opted on the British Council, and the *Field* Distemper Council is well assured that at least as much money will be forthcoming for the fund from the other side of the Atlantic as from our own countrymen.

PEKING UNION MEDICAL COLLEGE.

IN 1906 six medical missions in China, English and American, united to establish a school of medicine in Peking and thus laid the foundation of the Peking Union Medical College. In September, 1921, new buildings were dedicated, and as a result of the interest of the Rockefeller Institute in China there is now established an extensive medical centre, magnificently equipped and ably staffed, for the founding of a system of scientific medicine in the Far East. The addresses and papers in connexion with the dedication ceremonies have been printed in a sumptuous memorial volume.[1] We have received also Volume II of *Contributions from the Peking Union Medical College*,[2] which includes papers delivered at the ceremonies in 1921 and reports of further work carried out in 1922. Many of these have already appeared in English and American journals, and the volume that has come to us for notice is largely a collection of reprints. It is to the research of the Chinese workers that one is more particularly attracted in that it should show more than anything else the standard and progress of a college such as this, and we cannot but be impressed with the thoroughness of their papers, revealing, as they do, many months of painstaking investigation. Three papers by Hsien Wu on blood analysis call for special attention, for such work has already established for the author a place among the biochemists who deal with blood and its investigation. The first paper, on the separate analysis of the corpuscles and plasma, is a most interesting survey of the distribution of more particularly non-protein nitrogen in the blood tissues, and the conclusion is reached that plasma analysis should be substituted for whole-blood analysis. The second is an account of a new colorization method for the determination of the plasma proteins, and is full of experimental detail and laboratory technique. The third paper is a contribution to studies in haemoglobin. Dr. T. M. Li, an Associate in Ophthalmology of the College, contributes two interesting papers on this subject. The work of the European and American staffs is of interest, for unrivalled opportunity exists for the study of Eastern diseases, and papers on, for example, plague problems or the parasitology of China attract special notice. The volume is a valuable summary of the year's work, and is a hopeful indication that scientific medicine has already secured a foothold in China.

COLLOIDAL GOLD TEST FOR NEURO-SYPHILIS.

THE diagnosis of neuro-syphilis by means of the colloidal gold test has not come into general use, partly because of the difficulty of preparing a standard colloidal gold solution. Many different methods have been suggested by different observers, and for each of these methods particular advantages have been claimed; but it would appear that the essential detail in the preparation of a stable and sensitive gold chloride solution is the reaction of the fluids used. Mellanby and Anwyl-Davies[3] have devoted special attention to this point, and describe a relatively simple method whereby colloidal gold, neutral in reaction, may be prepared by adding 1 c.cm. of 1 per cent. gold chloride to 100 c.cm. of 0.01 per cent. boiling potassium oxalate. The water used must be freshly distilled, and all the glassware clean and of a hard variety. Experiments on the properties of the precipitating substances in cerebro-spinal fluid have led the authors to certain fundamental conclusions as to the rationale of this test. Cerebro-spinal fluid precipitates not only negatively charged colloidal gold, but also positively charged colloidal iron, indicating the presence of antagonistic colloids. It is probable, therefore, that the phenomena in the precipitation of colloidal gold by luetic fluids may be explained on the assumption of a balanced reaction between these oppositely charged colloids. The results obtained by observations on the precipitation of colloidal gold lead the authors to advance the following hypothesis: All cerebro-spinal fluids contain euglobulin and pseudoglobulin, the quantities of these substances increasing in the sequence from normal to tabetic and from tabetic to paretic cerebro-spinal fluid. Euglobulin is the active agent which precipitates colloidal gold; pseudoglobulin tends to keep the gold in solution and antagonizes the precipitating action of euglobulin, which is soluble in

[1] *Addresses and Papers, Dedication Ceremonies and Medical Conference, Peking Union Medical College, 1921.* New York: Trustees and Faculty of the Peking Union Medical College. 1923. (Imp. 8vo, pp. xi+416; illustrated.)

[2] *Contributions from the Peking Union Medical College.* Vol. II, 1922. Peking: Peking Union Medical College. 1923. (Sup. roy. 8vo; illustrated.)

[3] *Brit. Journ. of Exper. Path.*, vol. iv, p. 132.

electrolytes, tending to come out of solution on dilution; its precipitating action is therefore augmented on dilution; pseudoglobulin, on the other hand, is soluble in water, and therefore its capacity to hold gold in solution is diminished by dilution. The increased precipitating action of euglobulin in dilution appears to be responsible for the precipitation curve which has been described as typical of tabes. Probably all cerebro-spinal fluids contain a constant quantity of pseudoglobulin, but variable quantities of euglobulin. The tabetic curve is due to a small increase in euglobulin, which manifests its action only in the intermediate dilutions, when its tendency to come out of solution is augmented to a maximal extent by dilution. In general paresis, on the other hand, the euglobulin is increased to such an extent that it overcomes the inhibitory action of the pseudoglobulin, and precipitates colloidal gold in the first dilution of the gold sol test. It is possible also that pseudoglobulin as well as euglobulin may be increased in certain luetic conditions. This hypothesis would explain why precipitation of neutral colloidal gold is always produced by paretic cerebro-spinal fluid, sometimes by tabetic fluid, but never by normal fluid; and also why cerebro-spinal fluid obtained from definite cases of general paresis often gives the precipitation curve assumed to be characteristic of tabes. Other experiments carried out by these authors have shown that the precipitating substance is non-dialysable, is precipitated by half saturation with ammonium sulphate and by 50 per cent. alcohol at 0° C., and is destroyed by heat at temperatures depending upon the reaction of the fluid and the duration of heating.

FUNGI OF FROZEN MEAT.

THE department of Scientific and Industrial Research of the Food Investigation Board has just issued a report, by F. T. Brooks and C. G. Hansford, on mould growths upon cold-store meat.[1] The more detailed and technical part of their report has already appeared in the *Transactions* of the British Mycological Society; but the first six pages give a clear and useful account, in plain language, of the kind of mould that grows under conditions of cold storage. Putrefactive bacteria, whose growth is inhibited by low temperatures, cause meat to go bad, but the moulds that grow at temperatures about or below freezing point are harmless, although they give the meat a disagreeable appearance. The best known, the most unsightly, and the most serious from the economic standpoint is the *Cladosporium herbarum*, which causes what is known on cold storage meat as "black spot." It will grow at a temperature of 18° F. Other characteristic moulds are the white and the bluish-green moulds. The former are of two varieties—one, the *Sporotrichum carnis*, which has not hitherto been described scientifically, causing small white spots, and the other the moulds which give rise to the profuse growths known in the meat trade as "whiskers." These growths project for more than an inch beyond the surface of the meat, but collapse when exposed to a relatively dry atmosphere. The bluish-green moulds belong to the well known genus *Penicillium*, commonly found in cheese and on rotten apples and oranges. Another form of growth, that almost invariably arises on meat exposed to a temperature a degree or two above freezing point, consists of small colonies of certain yeasts, either pink or white in colour. When dry the white colonies frequently assume a brown colour, the "brown spot" referred to by other workers on meat moulds. These colonies of white yeast are difficult to distinguish from groups of bacteria, although in view of their relative significance in condemning meat or otherwise it is important to do so. The practical lessons which are learnt from the report are the necessity of cleanliness in abattoirs, of cooling the meat as rapidly as possible after slaughtering so as to avoid mould spores settling on it before it is placed in cold storage, and the maintenance of a temperature in cold storage chambers of 10° to 15° F. Where storage chambers get badly contaminated with mould spores, the meat should be removed and the chamber thoroughly cleansed with disinfectants before fresh meat is placed in it. But it is comforting to know that the mould growths are innocuous, and can be removed easily from the surface of the meat, or can be cut away when they grow into the skin, as in the case of "black spot."

[1] "Mould Growths upon Cold Store Meat." Food Investigation Board Special Report No. 17. By F. T. Brooks, M.A., and C. G. Hansford, B.A. H.M. Stationery Office. 1923. (Pp. 142; 9 figures. 1s. 6d. net.)

INTERNATIONAL CONFERENCE OF RED CROSS SOCIETIES.

THE eleventh International Conference of Red Cross Societies, organized by the International Red Cross Committee of Geneva, began at Geneva on the afternoon of August 28th, and ended on September 1st. The conference opened with a meeting of special delegates, one from each National Society, and of members of the International Committee, to form a bureau and draw up a programme of business. This was followed by the opening general meeting, presided over by the venerable international jurist, M. Ador, once President of the Swiss Confederation, and for many years President of the International Red Cross Committee. In the course of his address M. Ador referred to the work of the Red Cross and touched on the efforts that had been made during the past year, but without success, to come to an agreement with the League of Red Cross Societies. An animated discussion followed the reading, by Dr. Depage of the Belgian Red Cross Society, of a letter from the three delegates of the United States, intimating their reasons for not attending the conference. A committee of fifteen was appointed to study the question of amalgamation and report on it by June, 1924, and there the matter rests for the time being; the views of delegates regarding this committee were expressed at a private meeting held on the morning of August 30th. In other respects, the business transacted during the conference was uncontroversial. Committees were set up to study and report on such questions as general Red Cross finance and the formation of a special reserve of funds, and the drawing up of a code for dealing with civil populations in occupied enemy territory or civilians interned in enemy belligerent territory. Senator Ciralao, President of the Italian Red Cross, gave an address on the personnel and stores needed for use during sudden calamities. The various committees met in the afternoons; at the morning sessions a delegate from each Red Cross society gave a summary of the work carried out by his society since the last international conference in April, 1921. This year's conference at Geneva was attended by delegates from forty-four national Red Cross societies and from thirty-eight Governments, and twenty-two representatives of charitable and humane societies attended by invitation. Two receptions were held, one on the evening of the opening day and another on the evening of August 31st.

A COURSE of lectures on problems of personal and public health will be delivered in the lecture hall of the Royal Institute of Public Health, 37, Russell Square, London, W.C.1. The first lecture will be delivered on October 17th, at 4 p.m., by Dr. Alfred Greenwood, M.O.H. for Kent, and subsequent lectures will be given on succeeding Wednesdays at the same hour. The lecturers will include Professor J. C. Drummond, of University College, London, Major H. Graeme Anderson, Dr. W. A. Bullough, Dr. Kate Platt, and others. The Harben lectures will be given by Professor C. Levaditi, of the Pasteur Institute, Paris, on December 11th, 12th, and 13th, on (*a*) neurotropic virus (encephalitis); (*b*) neuro-vaccine; and (*c*) new discoveries in the treatment and prophylaxis of syphilis.

THE MINISTRY OF HEALTH: FOURTH ANNUAL REPORT.

THE report of the Ministry of Health for the year ending March 31st, 1923, has now been issued.[1] Following a prefatory note the report is divided into five parts—(1) Public Health, (2) Local Government and Local Finance, (3) Poor Law, (4) National Health Insurance, and (5) the Welsh Board of Health.

Expenditure on health services was less than in the previous year, mainly owing to downward movement in prices and rates of interest, partly also to closer examination of institutional expenditure. The assisted housing scheme under the Act of 1919 was almost complete, over 154,000 houses having been erected at an average cost of £1,080 per house. There still remained 17,000 houses to be dealt with, of which over 13,000 tenders had been approved and over 9,000 had been started. Prevention of unemployment and supervision of relief of distress involved a total authorized expenditure of £24,000,000 by local authorities, over £8,400,000 being for works to provide employment. The Rockefeller School of Hygiene scheme is so far advanced that the transitional executive committee is to be replaced under Royal Charter by a permanent governing body, and preliminaries relating to the erection of the buildings on the site at Bloomsbury are being dealt with. The Voluntary Hospitals Commission has disbursed £421,000 of its half-million Exchequer grant, and regards the maintenance income as satisfactory, new and regular sources of revenue having been opened up in many areas. Urgent need, however, remains for additional bed accommodation. Many special inquiries have been conducted by the Ministry during the year, and have been the subject of reports separately issued.

PUBLIC HEALTH.

This section of the report covers a wide field.

Tuberculosis.—Concerning tuberculosis it is gratifying to learn that notifications and deaths, both from pulmonary and non-pulmonary forms of the disease, show a very notable diminution. In 1915 primary notifications of pulmonary tuberculosis numbered 68,309, and in 1918 a maximum of 71,631 for the period under notice was reached, but since then there has been a steady diminution, so that for 1922 the notifications are reduced to 53,422. In non-pulmonary tuberculosis 1915 had 22,283 notifications, and 1916 had 22,799. That was the highest figure, and the past three years have been well under 16,000, the exact numbers being 15,488, 15,368, and 15,837. Coming to deaths, the fall in the past five years is also satisfactory. In 1915 they numbered 40,803, and by 1918 they had risen to 45,338. There was then a remarkable drop to 35,984 in 1919, and the minimum of the period came in 1920, when the deaths were 32,791, but in 1921 they were 33,505, and in 1922 33,919. Deaths from non-pulmonary tuberculosis have diminished even at a more rapid rate, the figures for the eight years 1915-22 inclusive being as follows: 13,492, 13,089, 13,599, 12,735, 10,328, 9,574, 9,173, and 8,858. The deaths in 1922 were therefore less by fully a third than in 1915. One of the Ministry's medical officers visited Geneva in connexion with the Spahlinger treatment, and the clinical results warrant further investigation so soon as a supply of the complete serum and vaccine is available.

Venereal disease also appears to be declining. At the treatment centres in England only, the patients dealt with for the first time were in 1920, 99,000, in 1921, 79,000, and in 1922, 68,600. For syphilis the three years' figures were 40,000, 30,000, and 23,700 respectively; for gonorrhoea, 38,000, 30,500, and 27,500; and for soft chancre, 2,000, 1,500, and 900. The attendances at the centres show no diminution in 1922 as compared with the mean of the two previous years, and this indicates a laudable tendency not to discontinue treatment too soon, the same feeling being indicated by the fact that of patients submitting to examination 24 per cent. were found not to be suffering from venereal disease in 1922, as against 19 per cent. in the year 1920.

[1] H.M. Stationery Offices. (Med. 8vo, pp. xii + 164. 4s. net.)

Other infectious diseases are notable mainly for the fall in scarlet fever and diphtheria in 1922, and the increase in cases of small-pox. The small-pox cases were 979, the chief centres being Middlesbrough 240 cases, Ilkeston 108, London and neighbourhood 78, Doncaster 51, Belper Rural District 49, Oldham 46, and Saddleworth 45. In the provinces the type was extremely mild, though severe cases occurred; in London it was of extreme virulence. That outbreak is referred to in our notice of Sir William Hamer's report (p. 423).

Maternity and child welfare receives much attention in the report. In 1921 a minimum infant death rate of 83 per 1,000 births was achieved; that of 1922 is still lower, being provisionally stated as 77, and it is reasonably claimed that infant welfare work has played an important part in the reduction. While financial stringency prevents large extensions of the work, close scrutiny of expenditure and more efficient administration are being practised. The maternity and child welfare grants for 1922-23 amounted to £785,204, and 436 local authorities are administering schemes. Details are given of the qualifications now required for health visitors, of whom there were 3,508 on March 31st, 1923, being an increase of 130 during the year. Nearly 300 additional are still required to bring the number up to the Department's standard of one whole-time officer for every 400 births. On the midwives' roll there are 51,565 names in England and Wales, of whom 12,422—less than a fourth—gave notice of intending to practise. Midwives notified 54 per cent. of the births in 1921, made up of 48.2 per cent. in London, 61.3 in the county boroughs, and 49.5 in the counties. The services of a trained midwife are now available for about 73 per cent. of the rural population of England. Maternity and infant welfare centres render important services, and usually serve also for health visitors' districts. Emphasis is wisely laid in the report on the policy that the main objects are to provide advice and teaching for mothers, and supervision of healthy infants, rather than treatment of the sick or provision of drugs and food at less than cost price. Voluntary enterprise plays a large part in the work of the centres. Dental treatment for expectant and nursing mothers is encouraged, and 300 centres now make such provision. There is still a shortage of institutional maternity beds, the total known of being only 1,879, or 204 more than in the previous year, and excluding Poor Law accommodation. Homes for mothers and babies now number 100, containing beds for 1,334 mothers and 1,288 babies. The question is being considered of introducing legislation for the registration of private maternity institutions, which are sometimes a subject of complaint. Powers have already been obtained by local Acts for London, Middlesex, Liverpool, and Manchester. Milk supply at less than cost price for expectant and nursing mothers and for young children has been provided under efforts to eliminate waste and abuse; notwithstanding widespread unemployment there has been some reduction in total outlay. Infant protection under Part I of the Children Act, 1908, continues to receive attention, the approximate number of children coming within the purview of the Act being 18,500, a decline of about 20 per cent. since 1920. Charges by foster-parents have risen, and unemployment has led to more children being kept in their own homes.

NATIONAL HEALTH INSURANCE.

The report deals with many points of interest in Health Insurance. In the smaller Insurance Committees—those with twenty or twenty-five members—local Medical Committees now appoint two members instead of one as formerly. The present Insurance Committees continue in office until November 1st, 1924. In sixteen cases questions of the scope of medical benefit were reported to the Department, the Local Medical and Insurance Committees being in agreement, that in thirteen cases the disputed service was outside of benefit, and in three cases within its scope. The total cost of the service for England (Wales being reported on separately) was approximately £7,500,000, of which £5,950,000 was paid to doctors for treatment. In addition rural practitioners received £210,000 on account of mileage.

Drugs.—For drugs and appliances about £1,212,000 was paid to chemists and about £180,000 to doctors. Prescriptions were unusually numerous in the first quarter of the year, and the total dispensed by chemists was about 33,400,000, or 3,200,000 more than in 1921-22. Arrangements for standard dressings of superior quality came into force on March 1st. In respect of inquiries into extravagant prescribing, arrangements are being made which it is hoped will lead to more uniform administration.

Standard of Treatment.—Supplementary grant voted to provide a satisfactory standard of service was withheld from 121 doctors and 16 chemists, the total withheld being £2,175. In one case £300 was withheld from a practitioner for failure to notify the Insurance Committee that he had ceased to employ a permanent assistant, and £200 was withheld later from the same practitioner for not employing a whole-time permanent assistant. Sums of £100 and £80 were withheld for failure to provide proper treatment, £75 and £50 for not keeping records, and £50 for irregular certification. These were the largest amounts withheld. Among chemists, sums of £1 to £5 were withheld for various offences, such as refusal to dispense, alteration of a prescription, and inaccurate dispensing. During the year the Minister of Health received six representations for removal of doctors from the panel and five for removal of chemists. In two of the six medical cases the name was removed, one of them on a conviction for manslaughter. Two of those not removed had £100 supplementary grant withheld. There were only twenty-nine appeals against decisions of Insurance Committees regarding medical benefit. Of eighteen cases where doctors or chemists were the appellants, nine were dismissed, four allowed, three withdrawn, one decision was varied, and one appeal had been made outside the prescribed time.

Schemes of Additional Benefits.—The schemes adopted by approved societies with valuation surpluses have mostly been in operation for a year and nine months. Extra cash benefits have been easily administered, but other benefits have passed through a tentative and experimental stage, and in about fifty cases variations have been sanctioned. Until recently, indeed, many societies have found difficulty in spending the whole of the sums available. It is a common practice for societies with limited resources to require the member to pay a part of the charge made by the dentist, optician, etc., but during a period of excessive unemployment some members could not meet their obligation in that respect, and the Department has allowed societies to disburse for the time the whole amount, recovering the member's share by instalments. It appears from the report that the favourite non-cash benefits have been dental treatment and optical treatment, hospital or convalescent home treatment, and the provision of medical and surgical appliances. Amongst these, the provision of dentures stands easily first, and it is remarked in the report that looking to long years of neglect it is not to be wondered at. Societies are not entitled to set up clinics for the purpose, the benefit taking the form of payment for treatment. Also, there are no panels of dentists. The societies can, within their means, pay directly to members on their production of receipted bills, or pay in accordance with arrangements with any selected registered dentists, or through institutions or agencies. The Department cannot interfere in disputes arising out of arrangements to which it was not a party. Similarly, it is pointed out, the best way to utilize the £280,000 a year available for hospitals and convalescent homes is to be determined by the committee of management of each society. The larger societies have arranged with the British Hospitals Association on a basis of the duration of indoor treatment of members, and some smaller societies have arranged with local hospitals, also in respect of in-patients only, all the others being outside the scheme. Some societies, having members whose occupation involves eyestrain, have found optical benefit of particular use, and not very costly. The popularity of non-cash benefits has led to proposals for their extension; massage, radiant heat, electrical treatment, brine baths, and laboratory facilities have all been suggested. In concluding this part of the report, the Ministry holds it clear that such additional benefits have been most useful, and will react favourably on the prevention of sickness, and eventually reduce the claims on the benefit funds. Insured persons and societies are reaching like conclusions as to the advantage of extending treatment benefits rather than cash benefits, and it is confidently believed that when the second valuation of societies is made the schemes adopted for utilizing surpluses will show a substantial advance in the provision of such facilities. That valuation, it may be noted, is to be made for some societies as at the end of 1922, and for others as at the end of 1923, the object being to spread over a longer period the heavy departmental work involved.

Regional Medical Officers.—This is the last matter of which we propose to make mention. When these officers were appointed in 1920 they were intended to deal not only with questions of capacity or incapacity, but also to consult with the practitioner in cases of admitted incapacity, as to restoration to health. Only the former function was undertaken at first, and only in urban areas containing about three-fourths of the total population of the country. The service was extended in the autumn of 1922 in respect of both these limitations. The references to the regional medical officers in England in 1922 totalled 103,010, of which 36,749 related to men and 66,261 to women; 101,003 were referred by societies, 1,426 by practitioners, and 461 by Insurance Committees. However, 23,022, or 22.3 per cent., failed to present themselves for examination; 19,361, or 18.7 per cent., declared off the funds without attending for examination; 18,918, or 18.4 per cent., were found capable of work, and 41,745, or 40.5 per cent., incapable of work. In Wales, for which the statistics are given in Part 5 of the report, the corresponding percentages were: failed to appear, 23 per cent.; declared off the funds without examination, 20 per cent.; capable of work, 22 per cent.; incapable of work, 35 per cent.

Nova et Vetera.

A MEDICAL LIBRARY TWO HUNDRED YEARS AGO.

In a previous contribution* to Nova et Vetera some account was given of a remarkable sale of books belonging to Sir Robert Sibbald, the noted founder of the College of Physicians and the Botanic Garden of Edinburgh. The sale by auction took place in 1723; it must have aroused considerable interest in the medical profession and amongst scientists at the time; and it may even have led London buyers to face the dangers of the Great North Road to attend it. It will not be uninteresting to glance at some of the books which tempted bidders on that winter's day (February 5th, 1723) in Edinburgh two hundred years ago.

The distinctively medical works in Sir Robert Sibbald's library numbered 799; there were 136 folios, 274 quartos, and 389 of octavo size or smaller. Seventeenth-century works predominated; but there were also many of the sixteenth century and one or two of the fifteenth.

The highest price (£10 18s.) was obtained for the Paris edition of the works of Hippocrates and Galen; it was entered as "Hippocratis et Galeni Opera Gr.Lat. cum Notis Charterii, in 10 vol. Lutetia, 1679"; and it may be that it was bought for the Royal College of Physicians, which has this edition; it bears no trace of Sibbald's name, but this may be due to the fact that it has been rebound. Another edition of Hippocrates was that of Geneva (1657); it was entered as "Hippocratis Opera Gr.Lat. cum Notis Foesii." From the marginal prices in ink and pencil in the copy of the catalogue which the present writer has before him it would appear that the original owner of the catalogue had been ready to bid a guinea for the work, but it was sold for £1 7s. Another book which brought a good price was a Stephanus edition of *Medicae Artis Principes post Hippocratem et Galen.* of 1567; it was bought for £2 10s. Most of the medical works, however, even among the folios, brought only one or two shillings, the quartos and more especially the octavos went for less, sevenpence being a not uncommon figure.

The languages in which most of the medical works of two hundred years ago were written were clearly revealed by the catalogue: among the 136 folios only four were in English and one in French; the remaining books were nearly all

* BRITISH MEDICAL JOURNAL, June 3rd, 1922, p. 888.

Latin, but there were a few in Greek. It is interesting to note the four English folios (all published in London); they were Wirtzung's *Practice of Physic* (1598); Richard Wiseman's *Chirurgery* (1676); Edward Tyson's *Anatomy of a Pygmie* (it was really a chimpanzee), bearing date 1699; and William Coles's *History of Plants* (1657). The French folio was Guilleman's *Oevres* [*sic*] *de Chirurgie*, published in Rouen in 1649. There was a little more variety among the quartos and octavos. In English one meets with Thomas Cogham's *Haven of Health* (1636), *The Secrets* of M. Alexis of Piedmont (London, 1558), Barrough's *Method of Physic*, Alexander Read's *Chirurgery* (London, 1650), Pitt's *Preservative of Health and Life* (London, 1704), Tippermalloch's *Receipts* (Edinburgh, 1716), Paxton's *Essay* concerning the Body of Man (London, 1701), Roger Bacon's *Cure of Old Age* (1683), Manwaringe's *Treatise of the Scurvy* (1669), Culpepper *Of the Rickets* (1651), W. Hugh's *American Physician* (London, 1672). The subjects of all these might be matched from publishers' lists to-day, and it is very modern to find books on scurvy and rickets. We should not, however, to-day expect a book to be published with the title of Harvey's *Case of a Nobleman deceased* (1685). In French are to be found Le Clerc's history of medicine (1702), Mauriceau's *Maladies des Femmes Grosses et Accouchés* (1675), Franc. Thevenin's surgical works (1669), Nicholas Lemery's lectures on chemistry (1683), *Le Médecin des Pauvres* (Paris, 1674), a book on the treatment of hernias (Paris, 1678), and Massard's *Sur les Panacées* (Amsterdam, 1686). There are works in Italian too: Bacci's *del Tevere* (Venice, 1576), the *Flagello della Peste* by Conte Castello (Messinae, 1656), a lecture on podagra by Matteo Soriano (Palermo, 1635), Mercurio's *La Commare* (1604), and the *Secreti della Signora Isabella Cortese* (Venice, 1584); there were a few books in Dutch, such as Leeuwenhoek's *Ontledingen en Outdekkingen* (Leyden, 1686).

It is an interesting thing to find among Sir Robert Sibbald's books the works of another medical knight, Sir Thomas Browne of Norwich. Thus, among the books classified as miscellaneous was "Dr. Brown's [*sic*] *Religio Medici*," but not in an early edition (1678); the *Vulgar Errors*, however, is represented by the first (folio) edition of 1646 (it sold for 2s.). In the same section is Burton's *Anatomy of Melancholy* in the fifth edition (1638), surely the most medical work ever written by one who was not himself a medical man; it seems to have fetched the modest sum of 1s. 5d. at the sale.

As one turns over the pages of this 1723 catalogue and as the great medical works of the past catch the eye along with so many which are now unknown one cannot but reflect on the exceeding transitoriness of the fame which was theirs some two or three hundred years ago. One book here and there has still a slight appeal; for instance, the purchaser who bought the 1555 copy of the anatomy of Vesalius for 27s. is to be envied, and him also who got Ambroise Paré's *Opera Chirurgica* (1582) for 3s.; but Caspar Bravo's *Resolutiones medicae* (1664) and Joannes Philippus Ingrassia *de Tumoribus* (published at Naples in 1552) leave the reader cold, and Thome de Garbo's *Summa Medicinalis* does not attract.

It is more interesting to find that Sir Robert Sibbald had on his shelves the masterpieces of English literature. He had, for instance, John Milton's works and his *Paradise Lost* and *Regained* (1697, 1688); he had also the quarto edition of *Paradise Lost* (first edition of 1669); he had Gavin Douglas's Virgil (1553), a Boëthius of 1493, Du Bartas's "weeks" both in French and in Sylvester's strange English verse, Spencer's [*sic*] *Fairy Queen*, Dryden's Juvenal (1713), Sir Thomas More's *Utopia* (1684), Bocace's *Decameron*, Tasso's *Gierusalem liberata* (1582), Rabelais's Works Englished, Don Quixote (in French), Montaigne's *Essais* (1617), Geoffrey Chaucer's Works (1561), and Drayton's *Poly-olbion* (1613); and he was far in advance of many of his time in the possession of "Poema di Dante" (1613). In his library, therefore, there were lodged the aristocracy of general literature as well as the great works of his and of past times in theology, geography, history, as well as in medicine and surgery. Further, he was no mere book collector, for his letters to Wodrow, which were fortunately preserved and published in 1837, show a love of authors and an interest in the contents of the volumes which stood in his case far above those of the ordinary bibliophile. In his autobiography, in speaking of his medical attendance upon the Earl of Perth, he says:

"I, by his order, acquainted him with the curious books, especially pieces of divinity, history, poemes, memoirs of ministers of state, and discoveries in Philosophy . . . few weeks passed without letters, either when he was in England or here" (it would have been good fortune if these had been preserved). "He not only wrotte ane excellent style of English, but upon occasions made verse, and translated some psalmes of Buchanan, and some odes of Horace."

From his memoirs and his library it is possible to get a not inexact picture of Sir Robert Sibbald as the learned physician, the scientist, the man of affairs, and the lover of belles lettres, and so to reconstruct a portrait of him and his work which is both inspiring and pleasing. J. W. B.

OF PHYSICIANS AND BEARDS.

IN these clean-shaven days, when rude remarks are shouted in the streets at bearded men, it is curious to turn to a little essay entitled "Wherefore Physitians affect to weare great Beards," which forms one of a collection of *Accademical Discourses, upon several choice and pleasant subjects*, "written originally in Italian by the learned and famous Loredano, Englished by J.B." and printed at the Blew Bible in Bedford Street, London, in 1664. From internal evidence the translator appears to have been Joshua Baildon, who acknowledged himself as translator of an earlier volume entitled *The Rarities of the World*. For the opportunity of examining these old books we are indebted to Dr. F. J. Baildon of Southport,, who comes from the same stock as the erudite "J.B." John Francis Loredano, according to Lemprière's *Universal Biography*, was a senator of Venice, author of a *Life of Adam*, *History of the Kings of Cyprus*, some comedies, etc., collected in six volumes. He was born in 1606.

"The Beard," we read in the opening sentence, "is an ornament to the face, which adds handsomeness and veneration to the person. . . . From hence it is that physitians . . . do take an especial care to have great beards." So far the author is as urbanely respectful to the medical profession as he is to *promissa barba*. But the chance of poking a little fun at the physician was too good to miss. Might it not be that the medical beard was worn to impress the public? Loredano develops this idea with sly gravity:

"Physitians would fain make others believe that they have the skill and art to bestow health, and to prolong the thread of life in despite of fate; and therefore fearing least the reproach of *Medice cura te ipsum* should be cast in their teeth, there is a kind of necessity they should maintain themselves in perfect sanity and a robust agedness, to which purpose . . . they are induced to nourish great beards, which in outward appearance makes them appear much older than they indeed are. Or else the knowledge of their art, requiring a long and laborious study, they by a long beard would fain be thought more ancient, and by consequence more experienced in their art, than otherwise would appear."

On the other hand, the explanation might be simpler and less unkind. Perhaps, after all, it was out of respect for philosophy that physicians "imitating philosophers, do nourish great beards." Or again, it might be due to consideration for the patient. The beard was a sign of sorrow or grief among the Romans.

"Who knows but that physicians willing to show themselves deeply interested in their patients' sickness and pain, do wear those long beards in token of sorrow?"

It is possible to detect in this a tincture of irony, but in his concluding passage Loredano allows a transparently generous phrase to escape him:

"The beard signifies or betokens (nay adds) confidence and courage. No wonder therefore that they are so much worn by physitians, who are every hour forced to combat and struggle with desperate diseases, nay with death itself."

On every page of these discourses, the author's ingenious arguments and speculations are supported by many quotations from the classics.

The preface to the volume ends with a touching appeal to the reader to overlook misprints. Although the translator contributes his own introductory epistle, we have a feeling that the last sentence, at any rate, of the preface, with its English epitaph flavour, may have been added by Joshua Baildon himself:

"The errors of the press which like other corruptions of this age, are very rife and spreading, are left to thy civility for pardon. Bear with them, judicious reader, and remembring what thou art, consider how much humanity is subject to mistake."

Scotland.

CHANGES IN EDINBURGH UNIVERSITY CURRICULUM.

CONSIDERABLE changes in the course of study for medical students have been introduced as a result of relegating inorganic chemistry and physics to a preliminary examination which must be passed before the student registers for medical studies. The period thus gained is to be devoted towards utilizing the latter part of the curriculum for a more intensive study of medical subjects proper, as distinguished from the subjects of general medical science such as physiology, anatomy, pharmacology, and pathology. A considerable gain both in arrangement of study and in the length of time devoted is obtained for the clinical subjects, to which the student will in future devote three hours daily in the third year, the greater part of each day in the fourth year, and the whole day in the fifth year. According to the old arrangement, by which medicine and clinical medicine were taken in the third year along with pathology and pharmacology, the student, being confronted with the immediate prospect of examination in the two latter subjects, paid little attention to medicine and found himself at a corresponding disadvantage when the time of the final examination in due course arrived. By the new arrangement, which comes into force in October, 1923, the year of study is divided into three terms, autumn, spring, and summer, which are of equal importance. At the end of his second year, and before he approaches the clinical subjects, it is intended that the student should have a short course in "human" as distinct from "scientific" physiology, and in applied anatomy. In the third year the student will approach the study of medicine with an elementary course of fifty lectures in the autumn term, and will have a similar introductory surgical course of fifty lectures in the spring term, and a similar course of lectures on clinical therapeutics in the summer term. For clinical work in the third year, the whole number of students of the year will be divided into two sections, so that in small groups they will have introductory courses in clinical medicine, in minor surgery, and in clinical pathology, microscopy, and chemistry. Each of these three introductory clinical courses will occupy the hours from 11 to 1 throughout one term. The afternoons throughout the third year of study will be occupied by materia medica and pathology, in which the student is examined at the termination of this year. In the fourth year the students of the year will be divided into three groups to be known as the medicine group, specialties group, and surgery group respectively. All of these groups will attend together fifty lectures on midwifery in the autumn term, fifty lectures on advanced medicine in the spring term, and fifty lectures on advanced surgery, as also lectures on public health and on forensic medicine, in the summer term. As regards the clinical work of the fourth year, in the autumn term the medicine group will spend the hours from 11 to 1 in medical ward work and will attend clinical courses in fevers and vaccination in the afternoons. The surgery group will occupy itself from 11 to 1 with surgical ward work and anaesthetics, and with out-patient visiting in the afternoons. The specialties group will devote the hours from 11 to 1 to special clinics, such as those in the ear, nose, and throat, skin, and ophthalmological departments. In the spring term of this fourth year the students previously constituting the medicine group will become the surgery group, and those who in the autumn term formed the surgery group will change over to the specialties group. A similar change will be made at the beginning of the summer term. In this way every individual student of the fourth year will have had three periods of three months concentrated successively upon the study of clinical medicine, clinical surgery, and clinical specialties. During the fifth year there will be no systematic lectures to attend. There will be again a division into three groups, which will in rotation for three months each take up clinical medicine, clinical surgery, and clinical midwifery with pediatrics. The clinical medicine group will, in addition to clinical ward work, attend tuberculosis clinics and visiting of out-patients; the clinical surgery group will include in its work venereal diseases and operative surgery; and the clinical midwifery group, in addition to attending deliveries, will study ante-natal clinical work and diseases of children. With this intensive clinical work, which frees the final year from systematic lectures and aims at preventing that dissipation of thought and energy which is incidental to studying widely different subjects in the successive hours of each day, the student ought to be better fitted to meet his final examination and much better fitted for the subsequent responsibilities of practice.

England and Wales.

VOLUNTARY HOSPITALS COMMITTEE FOR LEICESTERSHIRE AND RUTLAND.

WE have received from the Voluntary Hospitals Commission, Ministry of Health, the first report, dated July, 1923, of the Voluntary Hospitals Committee for Leicestershire and Rutland.[1] The Commission's opinion that the grouping territorially of the two counties would produce an efficient working unit seems to be borne out both by the report and by a map embodied in the report showing the places from which patients were received into the Leicester Royal Infirmary during the year 1922. Mr. T. Fielding Johnson was appointed chairman of the Committee. The Leicester City Council was represented by Mr. C. J. Bond, F.R.C.S.; the consulting staffs of hospitals by Mr. W. I. Cumberlidge, F.R.C.S.; the medical profession of the city and county of Leicester by Drs. W. Moffat Holmes and R. R. W. Logan; and the Rutland medical practitioners by Dr. F. H. Wallace. Dr. R. H. Fagge was one of the representatives of the Voluntary Hospitals Commission.

The Committee dealt first with its duty of advising the Commission on applications from voluntary hospitals within its area for a share in the Government grant of £500,000. Of eleven hospitals approached on the matter, only two made application for a grant. In the case of the Leicester Royal Infirmary, the Commission approved the recommendation of the Committee, and made a grant upon conditions which were accepted by the Infirmary authorities. In the second case no grant was made. The Leicestershire and Rutland Committee then turned its attention to the next two terms of its reference: first, to collect information as to the needs of the area; secondly, to further co-operation between hospitals. Six tables are given in the report showing the accommodation and possibilities of service in the area, in addition to the map to which we have referred. From this map the Committee notes the well known tendency of patients to seek treatment from a central institution, passing by local sources of help in their journeys thither. The unique position of Leicester as a hospital centre and the facilities for co-ordination of service and for transport by ambulance are also shown. The Committee states that although the services in the counties are numerous and extensive no serious attempt has been made towards co-operative medical service or unification. Especially is this the case with regard to the auxiliary hospitals which might play an important part in an efficient hospital service for the area. These hospitals have no definite standard to which they can be called upon to conform. In some cases a local hospital fails to attract all the patients it might attend because only a portion of the medical practitioners of the area are attached to it. There is a disinclination to place patients under the care of a rival practitioner in the local hospital, and the waiting list of the central institution becomes congested. A contributory factor may perhaps be the feeling that such an institution must be better equipped both in personnel and material for dealing with serious cases—to the patient his own case is always serious.

To assist the Committee in considering hospital co-operation and co-ordination Messrs. Bond, Cumberlidge, and

[1] Leicester Co-operative Printing Society, Ltd., 99, Church Gate.

Harrison were invited to set forth their views. Mr. Bond favoured the establishment of a Central Hospital Information Bureau for the area, with close association between the central voluntary hospital and the peripheral institutions, in order to reduce the waiting lists of patients in some institutions. He thought that small but efficient out-patient clinics attached to cottage hospitals would eliminate the expense involved in attending a central institution. He suggested that cottage hospitals might make provision for convalescent patients from the central institution, and he submitted for consideration the establishment of a consultation fund in connexion with Hospital Saturday Society or the friendly societies. Mr. Cumberlidge desired to bring paying hospitals into close touch with the traditions and stimulus of the voluntary hospitals with a view to making modern methods of investigation and treatment available for every member of the community. Mr. Harrison looked to the use of Poor Law hospitals for the purpose of relieving the pressure on the voluntary hospitals.

The report concludes with a complaint that there is little financial recognition by insurance committees of the services of the voluntary hospitals of the area. Approximately 48 per cent. of the in-patients passing through the central voluntary hospital are insured persons. For these patients some contribution is received from approved societies. But for out-patient work, such as eye and dental treatment, the approved societies make no financial recognition at all.

Leeds Maternity Hospital.

The medical report of the Leeds Maternity Hospital for 1922 shows that during the year 2,945 maternity patients were treated—1,039 in their own homes and 1,906 in the hospital. Of the 1,906 in-patients, 1,531 were delivered at or near full term, 41 cases were admitted after delivery, 30 were cases of abortion, 1 was an ectopic gestation, and 303 were discharged undelivered. The total number of births was therefore 2,570, which is an increase of 20 from the previous year. Of the 1,906 in-patients 23 died, but this does not imply that 23 of the cases delivered in the hospital died, because 41 were cases admitted after delivery, the greater number of which were cases of puerperal sepsis. Of the 23 deaths 6 were due to puerperal sepsis, 5 to heart disease, 3 to eclampsia, 2 to pneumonia, while placenta praevia, adherent placenta and *post-partum* haemorrhage, albuminuria and concealed *ante-partum* haemorrhage, toxaemic vomiting, intestinal obstruction following Caesarean section for contracted pelvis complicated by eclampsia, pelvic peritonitis following Caesarean section, and phthisis, accounted for one each. The standard of morbidity adopted was a rise of temperature (during the first eight days of the puerperium) exceeding 100°, occurring twice within twenty-four hours, irrespective of the pulse rate and excluding the first twenty-four hours after delivery. Of the 1,531 cases delivered in the hospital 55 were morbid (excluding abortions), which is a percentage of 3.5. Septicaemia and sapraemia were the causes of 20 of these cases of morbidity, mastitis the cause of 14, and scarlet fever the cause of 6. Of the 303 cases discharged from hospital undelivered, 246 were sent home because they were not in labour; 57 were treated for various conditions, including 14 for albuminuria, 5 for hyperemesis, and 5 for threatened miscarriage. The infantile mortality for the year, including premature children, was 246, or 15.9 per cent. The report gives interesting analyses of all the abnormal cases treated in the hospital.

Plague and Cholera Suspects.

The Ministry of Health has issued a circular dated August 31st, 1923, and addressed to port and riparian sanitary authorities in England and Wales, on the subject of suspected cases of plague and cholera. This states that in several recent instances the Minister has not been informed promptly of the occurrence of suspected cases of plague on ships arriving in ports, and there has also been delay in forwarding to the Ministry for bacteriological investigation material obtained from such cases, thus causing loss of valuable time. Port and riparian sanitary authorities are reminded that under the International Sanitary Convention of Paris the Governments of all participating countries must immediately be notified by His Majesty's Government of the occurrence of any case of plague or cholera in this country. In order that the Minister of Health may fulfil his obligation under the Convention every suspected case of plague or cholera should at once be reported to him, and material from such cases, if obtainable, or from rats suspected to be suffering from plague, should, as soon as practicable, be forwarded to the Ministry for bacteriological investigation. Any failure in this respect not only renders investigation more difficult, but may make confirmation of the suspicion impracticable. Examination of such material by the Ministry is carried out free of cost to the authorities. A memorandum containing directions for the taking and transmission of such material has been forwarded to the medical officers of health concerned.

Ireland.

Public Economy in Northern Ireland.

The Home Ministry (Northern Ireland) has notified the Banbridge Guardians of applications for renewal of several maternity and child wefare schemes. The Home Ministry further stated that it is considered desirable to remind local authorities and others administering such schemes that in accordance with the policy of the Imperial Government, which is being followed by the Northern Government, it was determined that as far as possible no fresh commitments involving expenditure out of Government funds should be undertaken for the present. This decision applies to existing schemes as well as to proposals for new schemes. The Ministry accordingly requests that all authorities administering these schemes will exercise the utmost economy and endeavour to keep their expenditure for the current year within the limits of their expenditure for the year ended December 31st, 1921. The guardians, after a long discussion, by a majority, voted £10 to Guilford Nursing Society.

Organization of Army Medical Services (Irish Free State).

In a recent publication of the organization of the different services and departments in the Irish Free State there is given an interesting account of the formation and rise of the Army Medical Services and the part played in their organization by the leading medical officers. It is stated that the present strength of the Medical Corps is: one major-general, who is a director of medical services, three colonels, seven commandants, twenty-five captains, seventy-nine lieutenants, eleven dentists, and twelve chemists. A badge has been designed and is being issued to all officers in the Medical Corps. It was selected and designed by the veteran antiquary Dr. Sigerson, F.R.C.P.I., and Commandant McKinney, M.D., A.M.S. The following is the description of the badge:

> It consists of a silver hand inset in a bronze oval. The silver hand recalls the tradition that Nuadad, Chieftain of the Tuatha de Danaan, lost his hand in the battle of South Moytura, near Cong, about 1,000 years B.C. The loss of a limb constituted so serious a blemish in those days that a maimed person could not be king, and consequently Nuadad had an artificial hand of silver made by the artificer, Credne Ceard, and fitted by the physician, Diancecht, so that he might succeed to the sovereignty. For that reason he was known as "Nuadad Airgead Lamh." The bronze oval consists laterally of a staff round which a serpent is twined. The staves are joined above by a scroll containing the superscription "Oglaig na hEireann"; below by a second scroll on which appears the motto "Comraind Legis."

According to a survey by the New York Society for the Relief of the Ruptured and Crippled, there are 36,000 cripples in New York, about 50 per cent. of whom are under 16 years of age; nearly half the cripples are not receiving any treatment. About 3,700 of the cases have been diagnosed as due to poliomyelitis, Pott's disease, and tuberculosis of the joints.

Correspondence.

MEDICAL CHARITIES.

SIR,—Under the above heading, during the past few weeks, I have watched wistfully the expressions of individual and collective beneficence; at long last, as one officially interested in the welfare of the Medical Foundation of Epsom College, I venture to plead on its behalf for a share of the publicity that, for better or for worse, has been monopolized by the very excellent Royal Medical Benevolent Fund. Like it, Epsom College dispenses many pensions—168 this year, if I remember rightly—to aged or disabled medical men, or if deceased to their dependants. But our greater work, and that that makes the more intimate appeal to the sympathies of our profession, is the bestowal of fifty foundation scholarships on the needy sons of deceased or disabled medical men. These afford, free of any charge whatsoever, a complete school education at Epsom College, which otherwise is a public school of the ordinary type, open to all, like Eton, Winchester, and the rest. The competition for these is keen and widespread. Writing away from London, I think I am correct in saying that the first boy on this year's list of six was the son of a widowed medical woman practising in India; and two other boys were the sons of fathers who held Scottish qualifications; this seems to guarantee the catholicity of our benefactions. For the maintenance of these scholarships, and for all that they imply and involve, we depend in the main on the generous support we receive from the annual subscriptions of members of the medical profession. With increased pecuniary support we could do much more, and do it better also.

Information as to the purpose and needs of the Medical Foundation will be gladly supplied by our Secretary, at 49, Bedford Square, London, W.C.1, or by myself, and the Secretary would also receive most gratefully any such help as has been foreshadowed in the letters that have appeared in your recent issues. My mind's eye looks forward to the day when my professional brethren, one and all, will come to look on the Medical Foundation of Epsom College with the same pride of possession as do the great societies that control and endow Tonbridge, Oundle, and other such schools, and I believe that they will help this vision to materialize. I have deliberately avoided allusion to matters of controversy; suffice it to say that if good will and good sense in concert cannot succeed by careful deliberation in determining or developing some *via media* satisfactory to all, I should despair of human nature.—I am, etc.,

August 25th. RAYMOND CRAWFURD.

VOLUNTARY BOARDERS IN MENTAL HOSPITALS.

SIR,—The 1922 report of Barnwood House Registered Hospital, by Dr. Townsend, is well worthy of your comment in your issue of August 25th (p. 337), and especially so are his remarks concerning voluntary boarders.

I have for years advocated:

1. That the report of the voluntary boarders for admission should contain the clauses of the Lunacy Act relating to their status, and that they should sign a statement that they have read and understood them.
2. That voluntary boarders should be kept apart from the chronic dements and noisy and dirty patients (I am afraid my experience tells me this is not always carried out).
3. That the period during which the medical superintendent could detain them, after they had given written notice of leaving, should be increased, in order to give adequate time for communication with the relatives.
4. That the Board of Control should be very broad-minded in their views as to "certification or discharge," and especially so with recoverable patients.

The recent suggestions of the Board of Control that voluntary boarders should not be placed under certificates while in residence in the mental hospital are no doubt the result of the well known law case of Miss Lilian Gaul *v.* St. Andrews Mental Hospital, which was carried to the House of Lords and dismissed in all the courts because the lady had not brought her action within the statutory period. Had she done so I venture a surmise that she might have obtained a verdict, and then the clauses relating to voluntary boarders might have been amended.

These clauses, if carried out as I have mentioned, and in no way abused, are most excellent, and the history of the cases in Barnwood House, as described by Dr. Townsend, speaks volumes as proof of their kind and successful treatment in this admirable institution. Nothing redounds more to the credit of a mental hospital than the contentment of its voluntary boarders.—I am, etc.,

Bournemouth, Aug. 25th. LIONEL A. WEATHERLY, M.D.

HEART DISEASE AND TONSILLAR INFECTION.

SIR,—I read with interest Dr. F. J. Poynton's lecture on the prevention of heart disease in your issue of June 2nd, 1923. Concerning the matter of focal infections which he refers to there are several points which I think might well be amplified.

He remarks that removal of tonsils does not prevent further attacks of rheumatic fever. Here one might suggest that the tonsils are not alone responsible, as focal infections, in the production of rheumatism. Under such conditions the removal of the tonsils will not benefit the case much. The antra and nasal accessory sinuses are not infrequently involved, also the mass of adenoid tissue in the nasopharynx. Again, the tonsils may not have been completely removed, for quite a small piece is sufficient to carry on the infection. Where recurrence has occurred careful investigation would probably have revealed some such condition, as it is not a matter of removing tonsils but of removing the breeding grounds of the organisms and doing away with their portal of entry.

Dr. Poynton is likewise not in favour of removing tonsils in rheumatic children when there is no evidence that they are diseased. The first point is to define what is a diseased tonsil. This, to my knowledge, nobody has been brave enough to attempt. If a mother has infected tonsils, how many months or days will it be before the child's tonsils are harbouring the same organisms?

Because nearly everybody's tonsils contain virulent organisms we have been apt to take it for granted that it is natural they should do so. This has resulted in a popular idea that the functions of the tonsil are to allow certain toxins to pass into the body to help build up its resisting powers. But there is nothing to warrant such an assumption, as people with infected tonsils are certainly not healthier than those without, which they would be if this assumption were true. The removal of tonsils does not lay people open to danger of having their resisting powers lowered, as experience shows us that they are very much improved in health after this has been done.

If, then, it is not the duty of the tonsils to act as a breeding ground for virulent organisms, it is very unwise of us to breed such dangerous things, as we never know the moment when they will turn on us and rend us. Such being the case, is it not better to exterminate, root and branch, such localities? Surely our lives are beset with enough evils without adding the dangerous pastime of seeing who can the longest breed the most virulent strain of streptococci and escape the undertaker. Unfortunately almost the whole population has become infected with certain pathogenic organisms, which are rapidly passed on from parents to children, as under present modes of living it is practically impossible for children to escape infection from their parents.

The appearance of the tonsil has very little to do with its infection, nor has its size. The whole point turns on, Are there any crypts capable of harbouring bacteria? If so, and the child is suffering from some rheumatic infection, failing to find any other possible focus the best treatment would be removal of the tonsils. There is very little risk incurred by so doing, very little inconvenience, and the benefits conferred are usually great.

There is so much hinged on tonsillar infection that a most thorough investigation should be made into the matter, particularly as to the age at which infection of tonsils takes place. Investigations should be made into the infection or otherwise of the tonsils in lower animals as well as the different races of mankind, for it would be interesting

to see if savage races are likewise involved. At present no man knows the far-reaching effect of tonsillar infections, but it is quite certain that they are responsible for untold ills.—I am, etc.,

SYDNEY PERN, M.R.C.S., L.R.C.P.Lond.

Melbourne, July 7th.

INTERMEDIARY HOSTS OF SCHISTOSOMA HAEMATOBIUM AND MANSONI IN NYASALAND.

SIR,—I have received a letter enclosing two tubes containing specimens of five species of fresh-water molluscs from Captain W. H. Dye, R.A.M.C., medical officer, Karonga, Nyasaland, British Central Africa. He writes: "I think I can say that the enclosed specimens represent all the fresh-water molluscs to be found in this district as I have searched most thoroughly."

Captain Dye was able to infect two of the species experimentally with *Schistosoma haematobium* and *Schistosoma mansoni* respectively. The molluscs have kindly been identified as follows by Mr. G. C. Robson, Zoological Department, Natural History Museum, South Kensington.

1. *Lanistes affinis* Smith (full-grown and young).
2. *Vivipara robertsoni* Frauenfeld.
3. *Limnaea natalensis* Krauss.
4. *Physopsis sc. globosa* Morelet.
5. *Planorbis*, sp. near *sudanicus* Martens.

Captain Dye writes of 4 (*Physopsis sc. globosa* Morelet):

"They are very common in the marshy pools, although rather difficult to find owing to their predilection for the muddy undersides of reeds, etc., and their habit of dropping off when the plant is touched. They appear to attract *S. haematobium* readily, and large numbers of miracidia disappear out of the tube in which they are put, against the control."

He goes on to describe in detail the experiments he made. He finds that the mollusc dies in two days when heavily infected with the miracidia of *S. haematobium* after taking precautions to keep the water as free from decomposition matter as possible. The experiments were repeated several times with the same results. The snails were "not killed by *S. mansoni*, but one cannot get such concentration of eggs from faeces as from urine."

In regard to 5 (*Planorbis*, sp. near *sudanicus* Martens) he writes: "The one and only species of planorbis in this part of the world (I have most thoroughly searched)." This species is not killed by a heavy infection of *S. haematobium;* but they were "infected from a good heavily infected stool with *S. mansoni*."

Captain Dye sent infected snails, but they died on the journey and were too decomposed for sectioning on arrival. He appears to have discovered that *Physopsis sc. globosa* Morelet is the intermediary host of *S. haematobium* in Nyasaland, and possibly he has also found the intermediary host for *S. mansoni* in Nyasaland (*Planorbis*, sp. near *sudanicus* Martens).

The other snails which he sent had, he wrote, no attraction for either *S. haematobium* or *mansoni*.—I am, etc.,

J. B. CHRISTOPHERSON, C.B.E., M.D., F.R.C.P.

London, W., Sept. 1st.

SCHISTOSOMA INFESTATION.

SIR,—The account by Drs. Sinderson and Mills in the BRITISH MEDICAL JOURNAL for June 9th (p. 968) of rectal papillomata in a patient at the Baghdad Hospital harbouring *Schistosoma haematobium* raises several points of interest.

First, the recent recognition of cases in Palestine, Mesopotamia, and Turkish Arabia suggests the possibility of the introduction of bilharzia disease to new countries, although the thoroughness with which this disease is now being studied would account for the recognition of cases in countries where until recently it was unknown. Severe manifestations of *Schistosoma haematobium* in a comparatively early stage of the disease might suggest that the parasite has but recently been introduced on to new soil. I have noticed slight manifestations of *Schistosoma mansoni* in two patients in Natal who have never left the country. It may have been that the condition had only recently been acquired, for both of them came complaining rather from the effects of *Schistosoma haematobium* which complicated the condition. Nevertheless, the finding of *Segmentina kanisaensis* Preston at Merebank, Natal, a shell which was previously known only from the Upper Nile, supports the assumption that *Schistosoma mansoni* infestation has been introduced from Egypt.

Secondly, a very high eosinophilia may occur in the acute stage of bilharzia disease. In my own case it rose to 39.5 per cent. during the hepatic invasion of the flukes, but fell to 12 per cent. in the next few months without treatment. It is not common to find such high eosinophilia in chronic cases, even where the infestation is a high one; a relatively high eosinophilia may persist even after the parasites have been successfully destroyed, although it generally returns practically to normal.

Thirdly, it is to be regretted that intravenous antimony could not have been employed before surgical measures were adopted in the case at Baghdad; for extensive bilharzia tissue rapidly subsides as the adult parasites and their ova are destroyed.—I am, etc.,

Durban, Natal, July 27th. F. G. CAWSTON, M.D.Cantab.

ORAL HYGIENE.

SIR,—The views of Sir John O'Conor on the use of the tooth-brush reiterated in your issue of August 25th are so diametrically opposed to the opinion and experience of the great majority of dental surgeons that they must not be allowed to pass unchallenged.

Sir John states his conclusion that the cause of "dental caries, pyorrhoea, gastric pollution, appendicitis, and organic decomposition in general"—a catalogue reminiscent of the "cancer, cataract, and consumption" of the quack medicine vendor—is to be found in the "inane daily scrubbing of teeth with bristles and by the insane use of chemical dentifrices."

Regarding "gastric pollution, appendicitis, and organic decomposition in general," whatever that may mean, I express no opinion, but the experience of thirty-five years has convinced me that the thorough and intelligent daily scrubbing of the teeth, and more particularly of the gums, and the reasonable use of a dentifrice, though this is far less important, reduces the incidence of dental caries and pyorrhoea to an enormous degree; and every day my belief is strengthened by results.

Dental caries is produced by the action of fermenting food particles on the teeth, which, with the progress of civilization, have acquired an increased susceptibility to this form of attack. The débris of the soft food of the present day lodges around and between the necks of the teeth, and in the crevices of their crowns, and until the cause of this susceptibility and the means of combating it shall have been discovered, or until the diet of the people shall have reverted to a more primitive type, thorough and careful removal of these particles with the tooth-brush remains the most efficient means of preventing caries and pyorrhoea; for pyorrhoea, like caries, begins as a dirt disease.

Débris lodging upon the gum margin infects it and sets up a marginal gingivitis. The gum margin becomes tender, swells, and stands a little way from the tooth instead of being closely applied. This affords lodgement for more débris, while the tenderness leads to avoidance of the contact of any cleansing agent; more accumulation increases, and a vicious circle is established.

Friction of the gum margin, provided by Nature when man lived on uncooked hard food, is essential to the health of teeth and gums alike; it removes the débris and stimulates the circulation in the gum margin and keeps it firm, pale, and healthy. As the cooked artificial diet of civilization no longer supplies it, it must be provided artificially. Carefully persevered with in spite of some soreness at first it will cure even a long-standing gingivitis, while it will prevent or arrest caries on all surfaces to which it is applied. For the application of this friction nothing is so good as a bristle brush, because nothing else penetrates so well between the teeth and reaches the interdental papillae, though when the gums are tender a rubber brush may be used until they are hard enough to tolerate bristles. A badger-hair brush is altogether too soft to effect this.

Space will not admit of a detailed description of how the brush should be used; it is enough to say that its stroke should be applied in the long axes of the teeth as one would brush the teeth of a comb, beginning on the gum margin, and that the brushing should be applied as carefully on the lingual as on the buccal surfaces of the teeth, the bristles being pushed between the teeth from inside and from outside to reach the interdental papillae. A dentifrice is of little importance in comparison with friction. Common salt is the oldest in the world and probably remains the best, but to keep the teeth clean, especially in the mouths of smokers, the occasional use of some paste or powder is a necessity. The tooth-brush, properly used, I believe to be the most powerful weapon we possess to-day in our fight against two diseases which are among the most prolific causes of ill health among civilized man.—I am, etc.,

J. H. BADCOCK,
L.D.S., M.R.C.S., L.R.C.P.

London, W., Sept. 3rd.

ACIDOSIS AND ACIDAEMIA.

SIR,—Dr. Cammidge's paper on acidaemia (August 25th, p. 318) is of great interest, and will go far to dispel the idea that the presence of acetone is indicative of acidosis.

The majority of children suffering from any febrile disease excrete acetone in their urine, and it seems probable that it is a more or less constant product of bacterial invasion in childhood.

If the measure of acidaemia is the amount of sodium bicarbonate required to alkalinize the urine, the test is surely of no clinical value. Dr. Cammidge gives half a gram per kilo of body weight as the necessary amount.

In a man of 10 st. this would involve a dose of 32 grams—more than an ounce—and for a baby of 11 lb. nearly 40 grains. Such doses are impracticable. They would need eleven times as much water to dissolve them, and they might have to be doubled. Less than a twentieth part of these doses of potassium bicarbonate is all that is necessary to render the urine strongly alkaline. Would not this drug be much more effective in neutralizing an acidaemia?—I am, etc.,

A. CAMPBELL STARK.

London, E., Aug. 25th.

ETHER *VERSUS* CHLOROFORM.

SIR,—The correspondence on this subject could perhaps be prolonged with advantage because any advance in general abdominal surgery in adults is likely to be due in great measure to the work of anaesthetists. During my short experience as anaesthetist, involving some five thousand cases of general anaesthesia, it often seemed to me that the increased risk of complications arising from the use of ether was more than counterbalanced by the increased facilities obtainable surgically with chloroform. At that time open ether was just coming into extensive use in this country, but the semi-closed methods had not been employed to any great extent. Gas and oxygen, combined with suitable muscular relaxants, had not been employed, or not employed extensively in general abdominal work, so that I was unable to have any experience of it.

It will be generally admitted that with the exception of certain fracture cases, deep muscular relaxation is not required in operations on the limbs, nor in cranial, neck, or thoracic cases, so that in these almost any suitable method may be used. The question of muscular relaxation, to which I wish mainly to refer, relates to abdominal and perineal operations, and also includes the setting, extension, and completion of splintage in fracture cases. In the usually simple and rather mechanical procedures of most such operations it rests with the anaesthetist rather than with the surgeon to secure efficiency. When relaxation is good anyone of average ability and practice can do the operation with some degree of efficiency and speed, *but when relaxation is bad no one can do it properly.* For instance, I have had my hand so tightly gripped in a loin incision for nephrotomy that I could not remove it without tugging, and I have seen the sac of a left femoral hernia come down into the wound a further one and a quarter inches as relaxation progressed. Had this last operation been completed without relaxation being attained the whole of the sac would not have been removed and any recurrence of the hernia might have been attributed to the non-employment of some special technique. Conversely the credit does not belong to the anaesthetist in a gall-bladder case if the liver happens to be of the type that with slight rotation can be drawn out of the abdomen, or in a renal case if the kidney has a long pedicle and is non-adherent; but in the ordinary operations on these organs good muscular relaxation is essential.

The chief disadvantage of the etherized patient from the surgeon's point of view is that a really first-class, high degree of complete muscular relaxation is seldom attained. That it *may* be attained by relatively inexperienced administrators is well known, though it cannot be achieved with sureness by the experienced. The muscles of the etherized patient almost always have a marked degree of tone. This may render a systematic examination of the abdominal contents through an incision just large enough to admit the hand difficult. Under these conditions also efficient closure of the wound may be a lengthy and tiring process, with a correspondingly increased liability to a ventral hernia or to adhesion of the omentum or intestine to the scar, and with a distinct element of risk to the operator and his assistant from a needle prick in a septic case. Increased haemorrhage also may be a minor disadvantage of the administration of ether, from vaso-dilatation or from respiratory obstruction causing slight but cumulative cyanosis; but with the modern types of incision a discount is necessary for the increased blood supply which they carry and also for any degree of inflammation that may be present. In intracranial operations increased haemorrhage or congestion may cause great difficulty. There seems to be a greater difficulty in maintaining a free, noiseless airway with ether than with chloroform, even when atropine has been given.

Until large figures for the bronchitis rate taken post-operatively for ten days by independent observers in different institutions are available we cannot assess the risks. I believe them to be much greater than is generally supposed.

When anaesthetists are prepared to measure muscular relaxation scientifically by means of a tonometer they will be able to improve greatly the purely surgical side of the matter. Such a tonometer could be made part of a wound retractor or could be adjusted on a limb away from the site of operation. Readings would be required for the different stages of the operation and the device would be of immense advantage to the anaesthetist himself. One practical way of estimating a medium degree of relaxation at the close of an operation is that in the absence of inflammation a continuous suture through the peritoneum and posterior sheath with a round-bodied needle just does not cut out as it is pulled taut.

There is a danger of the art of chloroform anaesthesia being lost. The student is taught it less and less and perhaps is overwarned of its dangers. Often chloroform is the method of choice, especially in outlying districts, or in certain operations involving a large exposure of a surface likely to ooze such as in a radical operation for carcinoma of the breast. Apart from spinal analgesia there is no greater degree of operative comfort to be obtained than by a skilled chloroform administration uncomplicated by any other drug. The slight degree of abdominal movement, the absence of excessive haemorrhage, and the high degree of muscular relaxation all materially shorten the operation and enable completeness to be attained. Any operator of experience knows that under these conditions the abdominal contents can be examined with ease and the abdominal wall can be accurately sutured in layers with considerable speed, whereas when the conditions are modified the process may become lengthy, tiring, and likely to cause shock.

It is a question how far the supposed increased risk, if any, from chloroform when given by an expert is operative in a patient whose lungs and heart are sound and in whom the airway is clear, especially if oxygen is given at the same time. In bad obstruction cases regurgitation may occur with any anaesthetic, even quite shortly after stomach lavage. Other risks such as rupture of an empyema

into a bronchus or that run by the patient with status lymphaticus are possibly more common with ether. These cases and the occasional fatality in a bad case of shock, in a circumcision case, or during a throat operation, account for the chief number of deaths. To them should be added the post-operative pneumonia and bronchitis cases, the acidosis cases, and the deaths following imperfect operation traceable to difficulty with the anaesthetic, such as some cases in which the wound bursts open from the difficulty of perfect suturing.

The question of the vitiation of the atmosphere of the operation theatre by anaesthetic vapours needs consideration, because the conditions are often such as would not be tolerated by the workers or even allowed by law to exist in any ordinary factory. The chief dangers are the production of phosgene gas from the decomposition of chloroform vapour by a flame or cautery, and the presence of an excess of ether vapour in the atmosphere.—I am, etc.,

G. H. COLT,
Surgeon, Royal Infirmary, Aberdeen.

August 27th.

SPASM OF THE LARYNX.

SIR,—In the condensed report of the discussion on spasm of the larynx in the Section of Laryngology and Otology (BRITISH MEDICAL JOURNAL, August 11th, 1923, p. 241), I am credited with associating laryngitis stridulosa with rickets. I need hardly say that in this I am incorrectly reported, and that my insistence was on the well known association of laryngismus stridulus (" spasm of the larynx ") with rickets and on its distinction from laryngitis stridulosa (subglottic laryngitis or common " croup ").

My reference to the production of closure of the glottis and restoration of voice in some cases of functional aphonia by faradization of the lingual tonsil was only apposite to the question under discussion in so far as it suggested a particularly sensitive " motor point " for the glottis closers. It supported Mr. Mark Hovell's contention as to the rôle of the lingual tonsil in the production and treatment of spasmodic laryngeal cough.—I am, etc.,

JAMES DUNDAS-GRANT.
London, W.

*** The full report of the discussion will be published in a subsequent issue.

CANCER RESEARCH.

SIR,—I only saw Dr. J. A. Murray's letter in your issue of August 18th to-day. I am quite aware that the British Empire Cancer Campaign is distinct from the Imperial Cancer Research Fund, and I do not think my letter would lead anybody to suppose that they were identical. I am also aware that the latter has been in existence for twenty years, and that the former has not yet become established.

My statement that the Treasury grant to the Imperial Cancer Research Fund is utterly inadequate would be quite correct if the word " Fund " were left out. That, of course, was my clerical error.

I do not know who was guilty of the libel referred to in the last paragraph of Dr. J. A. Murray's letter. As far as I am concerned I never made such a suggestion or wrote anything that would bear that construction.—I am, etc.,

LEONARD MOLLOY.
Blackpool, Aug. 25th.

TAR WATER.

SIR,—In the article on this subject in the JOURNAL of August 25th (p. 332) it is said that " all that remains of tar water in the memory of man is covered by a phrase "—namely, " to cheer but not inebriate." But popular beliefs die very slowly and I have known those in whom the faith was strong and who used tar water as a household remedy. As to its employment during the nineteenth century many references might be given. One need only instance the amusing scene in which Uncle Pumblechook is made the unwitting victim of its virtues. Across the Channel, however, the reputation of tar water was much more firmly established, and even among medical men.

As to its household use in Paris in 1889, I can speak from personal experience. In the modest restaurants which I frequented in the Quartier Latin, a jug of tar water stood on every table, and, like the bread, it was supplied *à discretion*. It was drunk alone or mixed with wine just as if it had been ordinary drinking water. The latter was then under grave suspicion. When my purse could not afford Vichy I preferred tar water to the untreated issue from the tap. I need scarcely add that this *eau de goudron* was not prepared according to the Codex method. The inside of the vessel was simply smeared with tar and when so treated was used as a water jug. With successive fillings the film of tar grew thin and a fresh coating was applied. Whether this custom still continues I cannot say, but it is many years since I patronized a Paris restaurant of the same description.—I am, etc.,

G. MATHESON CULLEN.
Edinburgh, Aug. 29th.

TREATMENT OF TETANUS.

SIR,—It may be of interest to record the case of a young lady, aged 16, who on the afternoon of May 15th fell on a paved garden path and cut the left knee just below the patellar tubercle. A small crescentic flap of skin and subcutaneous tissue about two and a half inches across was torn downwards and this wound was shortly afterwards attended to by a surgeon who inserted four catgut sutures, applied dressings, and sent her home with the knee on a back splint.

The patient was seen by me the same evening; the dressing was changed on account of some rather free oozing of blood, the area of the wound painted with 2 per cent. iodine, and a silkworm gut suture inserted at a spot where the edges were not adequately apposed and from which the bleeding was taking place. The wound was dressed on the 16th, 17th, and 19th, and appeared perfectly healthy and dry, and the patient comfortable.

On the evening of the 20th, the fifth day after the accident, she became somewhat restless and anxious, and complained of stiffness of the lower jaw, which was attributed to a tender tooth.

I saw her early on the 21st: temperature and pulse normal, wound almost healed, free from discharge, slightly tender along margins, appearance somewhat anxious and scared, and the mouth could only be opened for three-quarters of an inch with considerable effort and overaction of the retractor muscles. Masseters firm, neck movements normal. Upper molars left side were tender on pressure, but no sign of decay or alveolar inflammation. As her symptoms were suspicious I obtained and injected in the afternoon 4,500 units tetanus antitoxin intramuscularly.

On the 22nd, symptoms no longer doubtful: the mouth could only be opened half an inch, there was difficulty in swallowing on account of spasm, saliva ropy with frequent efforts to expel it, masseters rigid, and neck muscles stiff, recti abdominales contracted, face anxious with slight but definite risus sardonicus. In the afternoon, in consultation with Mr. Nitch, an anaesthetic ($CHCl_3$) was given, and 7,500 units antitoxin injected intrathecally. While recovering from the anaesthetic, and as her position in bed was being adjusted, a violent convulsion occurred with marked opisthotonos, respiration stopped, the face became intensely livid and engorged, and she appeared to be moribund, but on commencing artificial respiration the spasm relaxed, and breathing slowly recommenced.

On the 23rd there was extreme restlessness and insomnia, swallowing impossible on account of spasm, tongue severely bitten, mouth firmly closed, neck and back muscles rigid. Chloral gr. xv and ammon. bromide gr. xxx every four hours by rectum had very little effect. Temperature 100.6°, pulse 128. Morphine gr. 1/3 at bedtime. Antitoxin 8,000 units at 10 a.m. and 11,000 units at 10 p.m. intramuscularly. Rectal saline three-quarters of a pint night and morning. The wound in the meantime had been opened up, and the surfaces swabbed with 2 per cent. iodine. During the night another violent and protracted opisthotonic convulsion took place.

On the 24th, morphine gr. 1/4 every four hours controlled the restlessness, and gave some sleep; swallowing still impossible, and mouth firmly closed. Temperature 101.4°, pulse 120. Irritation of skin but no rash. Calcium lactate 1 drachm twice daily added to salines. Antitoxin 16,000 units at 10 a.m., 9.500 units at 10 p.m.

On the 25th, swallowing fluids by teaspoonfuls possible, but exciting spasms, tongue frequently bitten in efforts to expel saliva; mouth can be opened a quarter of an inch. Masseters and neck muscles rigid. Temperature 100.2°, pulse 112. Morphine gr. 1/6 every four hours. Antitoxin 8,000 units at 10 a.m., 4,000 units at 10 p.m.

On the 26th, patient quieter and less anxious, sleeping at intervals; small quantities of nourishment by mouth. Masseters and neck muscles rigid; attempts to open mouth cause marked overaction of facial muscles. Temperature 99°, pulse 112. Morphine gr. 1/4 at bedtime. Antoxin 4,000 units 10 a.m.; 4,000 units 10 p.m.

On the 27th, 28th, and again on the 29th, 4,000 units were given. The mouth could now be opened one-third of an inch with difficulty, the masseters and neck muscles still very rigid; spasm on swallowing still present, but less frequent. Mouth in fetid condition, and tongue swollen. Patient quiet. Temperature 99.5°, pulse 108. Morphine discontinued on the 28th; a marked urticarial rash appeared on trunk and limbs. (Calcium lactate still being administered per rectum.)

Slow improvement took place after the 30th. The temperature and pulse became normal on June 4th. Rash disappeared on

June 2nd. The mouth could not be opened to its full extent until June 15th, and a quite perceptible "risus" continued till about this date. The neck muscles also remained hard, and the gait on walking was stiff and constrained for more than six weeks.

Tetanus fortunately is not common in civil practice, considering the number of wounds of daily occurrence in which there must be a risk of infection. Its unexpected onset after a trivial wound, the dramatic symptoms, the dread so evident in the mind of the patient, the dismay of the relatives, and the frequently fatal result make up a combination which taxes at the time one's resources to the uttermost, and leaves a lasting impression on the memory.

Theoretically every patient who suffers from a soiled or lacerated wound should be injected with a prophylactic dose of tetanus antitoxin as a matter of routine, and as is the practice in military service in time of war; but in civil practice, when the risk of infection may appear to be slight, one is apt to trust to a careful disinfection of the wound, and spare the patient the pain, trouble, and expense of the injection, the annoyance of the subsequent rash, and the possible risk of anaphylaxis should serum have to be employed at a later date for some other infection—for example, diphtheria. Is it justifiable to take this risk?

If unfortunately infection has occurred, at the earliest onset of any suspicious symptom antitoxin should be injected and pushed to extreme limits. In this case I used 88,500 units in the course of nine days, with no untoward results except the rash. The supposed advantage of intrathecal injection must be balanced against the risk and disturbance of the necessary anaesthetic. Chloroform had to be given freely to obtain sufficient relaxation of the spinal muscles, and the first and most violent convulsion occurred immediately its administration was stopped. Morphine gr. 1/4 subcutaneously every four hours was far more effective than chloral and bromide given by rectum in controlling spasms and inducing sleep. Constipation was a marked feature throughout. The catgut used in suturing the wound was at my request examined bacteriologically, and found to be sterile.

It would be interesting to hear the views of those with experience of tetanus:

1. As to the routine use of prophylactic injections of antitoxin in all soiled wounds, slight or otherwise.
2. The advantages of intrathecal as opposed to intramuscular injection of the antitoxin, and the dosage and length of time during which the injections should be continued.
3. The incidence of tetanus in special districts—for example, certain parts of Essex, from which several cases have lately been reported.

In conclusion I must add that the recovery of this patient was chiefly due to the devotion and resourcefulness of her two nurses, Miss Tillot and Miss Thompson, to whom it is impossible to be sufficiently grateful.—I am, etc.,

Wimbledon, Aug. 27th. JOHN A. HAYWARD.

The Services.

DEATHS IN THE SERVICES.

Surgeon Major Thomas Beard Farncombe, Bengal Medical Service (retired), died on May 16th last. He was the son of George Farncombe, was baptized at Bishopston, Sussex, on August 4th, 1830, and took the M.R.C.S. in 1851 and the L.S.A. in 1852, over seventy years ago. Entering the I.M.S. as assistant surgeon in February, 1854, he became surgeon-major in 1873, and retired in February, 1875. He served in the Sonthal insurrection of 1855-56, and in the Bhutan campaign on the North-East Frontier of India in 1865-66. At the time of his death there were only two officers senior to him on the retired list of the I.M.S., the late Surgeon-General Sir Benjamin Simpson, who died on June 27th last, and who, though senior in rank and length of service, was several months younger, and Deputy Surgeon-General Clarence Cooper.

Lieut.-Colonel Henry Armstrong, Madras Medical Service (retired), died at Thun, Switzerland, on August 14th, aged 68. He was born on October 29th, 1854, educated in Dublin, and took the L.R.C.S.I. in 1877 and the L.K.Q.C.P. in 1878. He entered the I.M.S. as surgeon in March, 1878, became lieutenant-colonel after twenty years' service, and retired on June 30th, 1908. He served in the Rumpa rebellion of 1879-80, in the Afghan war in 1879-80 (medal), and in the China war of 1900 (medal).

Obituary.

ERNEST FRANCIS BASHFORD, O.B.E., M.D.,

Adviser in Pathology, British Army on the Rhine; formerly Director of the Imperial Cancer Research Fund.

WE regret to record the death of Dr. E. F. Bashford, which took place suddenly from heart failure on August 23rd at Manderscheid, Eifel, Germany.

Ernest Francis Bashford was the eldest son of William Taylor Bashford, and was born at Bowdon, Cheshire, in 1873. He was educated at George Heriot's School and Edinburgh University, graduating M.B., Ch.B. in 1899, and M.D. (with gold medal) in 1902, after a very distinguished academical career. He had been Vans Dunlop Scholar in anatomy, chemistry, zoology, and botany, Mackenzie Bursar in practical anatomy, Whitman Prizeman in clinical medicine, Houldsworth research scholar in experimental pharmacology, Stark Scholar in clinical medicine and pathology, and Pattison Prizeman in clinical surgery. After graduating he travelled to Germany as holder of the McCosh Scholarship for study and research in the medical schools of Europe. At Berlin he studied bacteriology and pharmacology; later he was awarded a Grocers' Research Scholarship and studied at Frankfort under Professor Ehrlich at the Institute for Experimental Therapeutics. For a short period he was assistant to Professor Liebreich in the Pharmacological Institute of Berlin. In 1901 he won the Milner Fothergill Gold Medal in Therapeutics of the University of Edinburgh, and returned in the following year to Edinburgh as assistant to the late Sir Thomas Fraser. While there Bashford published his well known monograph on the pharmacological antagonism of atropine and morphine.

In 1902 he was appointed director of the newly founded Cancer Research Fund, a position which he held till 1914, when he resigned through ill health. During these twelve years he held a prominent position in cancer research in this country and on the Continent, and built up the organization of the Imperial Cancer Research Fund as an experimental research institute. He was president of the International Congress on Cancer held at Heidelberg in 1906. His work at the Imperial Cancer Research Fund will best be remembered by the numerous contributions on the zoological and ethnological distribution of cancer, national and hospital statistics, the phenomena of transplantability of animal tumours and the induced resistance to them. Into the controversies which raged around these topics he threw himself with enthusiastic energy.

Bashford served in the R.A.M.C. from 1915 till the end of the war, first in the Mediterranean Expeditionary Force, then in France, and afterwards in the Army of Occupation, holding the post of adviser in pathology up to a few months before his death. He was mentioned in dispatches and received the O.B.E. He leaves a widow and one daughter, to whom the greatest sympathy will be extended by all who knew him.

We are indebted to Dr. ARCHIBALD LEITCH, Director of the Cancer Hospital Research Institute, for the following appreciation:

Though he gave up cancer research nearly ten years ago we are saddened by the news of Bashford's death. As a comet suddenly appears out of space, blazes gloriously across the sky, and fades rapidly out of sight, so did that forceful and brilliant and wayward personality impress us. It is true that he had considerable experience of medical research in Edinburgh, Frankfort, and Berlin, but when he was chosen to be the first superintendent of the newly instituted Imperial Cancer Research Fund he was a young man almost wholly unknown, and certainly untried in the responsibilities of such an office as he was to occupy. But the choice of the selection committee was superlatively justified by the results he was to achieve. Speaking from an imperfect book acquaintance with the state of cancer research at the time, I should say that the outlook was not hopeful; the solid work of pathological anatomy and histology had been completed to the limits of usefulness, the chemistry and biochemical investigations of tumours offered little scope, the exploration of numerous hypotheses was

carried on haphazardly in an atmosphere of speculation, and experimental methods of inquiry had scarcely been invoked. Bashford came at the time when Jensen had demonstrated the transplantability of animal tumours, and with imaginative foresight he seized on this primary discovery. He was more fortunate still in securing as his colleague Dr. J. A. Murray, the present director, and the two of them literally slaved in the upper rooms of the old Examination Hall on the Embankment. It is impossible for an outsider to apportion to each his separate share in that successful partnership, but between them in quite a short time they made the laboratory the Mecca of cancer research. Workers interested in the subject came from all parts of the world to study. Bashford was a tireless enthusiast, endowed with a keen brain and highly critical faculty, a ready and resourceful speaker, and a writer with the gift of clear exposition. Placed as he was in such a position, scornful of the old methods, he had more than the necessary pugnacity to force the new work and the new ideas into merited prominence, and his name soon became world-famous. His contributions to the study of tumour growth are mentioned in the Scientific Reports of the Imperial Cancer Research Fund and in many scientific periodicals of this and other countries. They embraced much more than purely experimental or biochemical research: statistical investigations, the comparative pathology of tumours, the ethnographical and zoological distribution of the disease, and numerous other departments of cancer research yielded their due portion to the harvest. In the nature of things clinical pursuits and utilitarian researches in surgical pathology were beyond the scope of the organization, but for those who have not closely followed the developments of our knowledge of cancer, and more especially those who are inclined to be impatient with progress, and who publicly proclaim the need for the exploration of all possible (and impossible) avenues of advance, a reading of the Scientific Reports should be a revelation. It must not be imagined that the laboratory study of medical problems, attractive though it may be, is pursued in academic calm and cloistered ease, or that results are the outcome of God-given inspirations. There is the haunting fear that sustaining ideas and fertile resources may fail; and especially in a subject which so directly affects the lay mind there is no wonder that many retire from the struggle. Bashford's work on cancer extended over little more than ten years; there were signs before the war that the old brilliance and resource were fading, and he dropped away. We are reminded of Meredith's lines:

> Be steadfast in that which impelled, for the peace
> Of Earth he who leaves must have trust:
> He is safe while he soars, but when faith shall cease
> Desponding he drops

But when all has been said in adverse criticism of him, his work still remains brilliant and intense, finished and accurate, suggestive and inspiring. He dominated cancer research, and had he continued until the experimental production of cancer—a thing he longed for—became practicable, he would still have been the foremost figure in the adventure. To me, who knew him not very intimately during his heyday, he leaves behind none but pleasant memories, and I am grateful to have known him. He was, I think, a genius, and he did great work.

GEORGE E. RENNIE, M.D., F.R.C.P.,

Consulting Physician, Royal Prince Alfred Hospital, Sydney, New South Wales.

WE have already expressed our deep regret at the announcement of the death on August 10th of Dr. George Edward Rennie of Sydney. He was a distinguished student of University College, London; he graduated M.B. at the University of London in 1887, and M.D., winning the gold medal, in 1888. Shortly afterwards he settled in Sydney, and was elected physician to the Royal Prince Alfred Hospital there. He devoted his attention specially to neurology, and in that subject in particular was one of the most trusted consultants in New South Wales. Dr. Rennie was also visiting physician to the Mental Hospital, Sydney, and took a deep interest in the institution of a clinic in connexion with the Royal Prince Alfred Hospital for early cases of mental disorder; he lived to see it established under the direction of Sir John Macpherson, formerly Commissioner of Lunacy for Scotland, who a little over a year ago was appointed professor of psychiatry in the University of Sydney.

Dr. Rennie did not publish many papers, but all that he wrote was marked by wide knowledge, large experience, and an almost meticulous desire for accuracy. In order to refresh his knowledge he spent some time in this country about fifteen years ago, and took the opportunity of attending the practice of the National Hospital in Queen Square, and many members of its staff remember the courteous retiring man, whose wide acquaintance with neurology had to be discovered, as it was never paraded. Dr. Rennie discharged all the duties of physician to the Royal Prince Alfred Hospital with punctilious care, and when he retired last November under the age rule, on attaining the age of 60, he was appointed honorary consulting physician, and along with Dr. Pockley, who retired at the same time from the post of senior ophthalmic surgeon to the hospital, was entertained to a complimentary dinner by the members of the honorary medical staff. He was deeply interested in the British Medical Association, and was President of the New South Wales Branch in 1903; for many years he acted as correspondent of this JOURNAL in New South Wales. He was also for a long period editor of the *Medical Gazette* variously known as Australian and Australasian; he only vacated office at the time of the amalgamation in 1914 which resulted in the establishment of the *Medical Journal of Australia*. His assiduity in earlier days paved the way for the success which has attended the *Medical Journal of Australia*.

Dr. Rennie can have had no enemies. He had many friends, who respected him for his high character and rich attainments, and loved him for his gentle spirit and large charity.

THE REV. D. W. TORRANCE, O.B.E., M.B., C.M.,

Medical Missionary of the United Free Church of Scotland at Tiberias.

THE death of Dr. David Watt Torrance at Tiberias on August 25th has removed one of the most striking personalities from the ranks of medical missions and a distinguished member of the medical profession. It is no mere metaphor to say that his life was a romance, and happily the story has been most effectively told in a volume published by Hodder and Stoughton entitled *A Galilee Doctor*. Here we see him as the brilliant student and then as house-surgeon at Glasgow Infirmary, the resourceful pioneer, the successful surgeon, the sanitarian combating cholera epidemics, the friend of Jew, Turk, Moslem, or Christian, and above all the devoted disciple of Him who was known as the Great Physician on the shores of Galilee, where Dr. Torrance planted his hospital. Many members of the profession will be interested to read this thrilling story of one of their number who heard the call to service in one of the most difficult districts in the world.

Two remarkable adventures indicate the spirit of this intrepid missionary. In the first instance he went out in one of his small boats, the *Clyde*, in the teeth of a furious storm on the lake to find his second boat, the *Kelvin*, which had slipped from its moorings. The second incident tells of his motor car held up on a level crossing in front of an approaching train, and of his efforts to drag it from the line lest the train should be derailed. He was knocked down and rendered unconscious and suffered from shock.

Torrance was born at Airdrie on November 6th, 1862, the son of a skilful surgeon and oculist, and the hereditary love for the medical profession has passed to his family, one son and two daughters having received their qualifications. His son, Dr. Herbert Torrance, had joined his father at Tiberias.

Like all pioneer medical missionaries he began his work by attempting skilled work in the most hopeless surroundings, but he has left behind him well equipped hospital buildings. Only those who know the Turkish régime can have any idea of the difficulties which were placed in his

way, all of which he was enabled to surmount. Dr. Masterman, with his long experience in Jerusalem, knew Dr. Torrance well and bears high testimony to his professional skill and his missionary qualifications. As a surgeon he was particularly successful and always kept abreast of the times; before the war he was regarded as one of the leading surgeons in the Near East. The onset of war with Turkey meant the break-up of his work, as of all missions in Palestine, and Torrance did valuable service at home in the R.A.M.C., being in charge of a Scottish hospital with the rank of major. On his return to Palestine he was able once more to reopen his hospital, and was awarded the O.B.E., a recognition by those in authority of the great value of his work.

The sudden death of Dr. CLARENCE ROBINSON from angina pectoris while on holiday at Ramsey, Isle of Man, on August 29th, caused much sorrow in the Warrington district. Dr. Robinson was a native of Cork, and received his medical education there; he took the diplomas of L.R.C.P. and L.R.C.S.I. and L.M. in 1903. He was for a time house-surgeon at the Ramsgate Infirmary, and afterwards visiting surgeon to Ramsgate and St. Lawrence Dispensary; subsequently he was for nearly two years in practice at Camberwell Green. In 1908 he took over a practice in Latchford, Warrington, near the Cheshire boundary, and very soon his professional skill and assiduity built up an extensive practice. He became an honorary surgeon to the Warrington Infirmary, and his skill as an operating surgeon was recognized by his colleagues. He was also surgical specialist to the Warrington Pensions Board. During the war he acted as a visiting surgeon to the Lord Derby War Hospital and to the Red Cross Hospital at Thelwall Heyes. He was a loyal member of the British Medical Association and of the Warrington Panel Committee. Dr. Robinson has been cut off suddenly in the prime of life—he was only 42—and in the height of success, and much sympathy has been extended from all classes to his widow and her two sons.

Dr. WALTER SMITH CHEYNE, V.D., died in Aberdeen on August 19th, aged 70, having been taken ill while on holiday at Dinnet, on Deeside, and removed to his home. He was born in Aberdeen, and educated at Stevenson's School, Aberdeen, and at the grammar school and university of that city, where he graduated as M.B. and C.M. in 1876, and as M.D. in 1884. He started in practice in Aberdeen in 1882, and at the same time joined the old Volunteer Force as surgeon, serving first in the Volunteers and later in the Territorial Force, up to 1916, when he retired in the rank of colonel. During the recent war he served as medical officer in the Highland branch of the R.F.A., and later in the Aberdeen Volunteer regiment. He received the Territorial Decoration in 1901. Dr. Cheyne was a member of the Aberdeen Division of the British Medical Association. He is survived by three daughters and one son, Captain D. G. Cheyne, M.C., R.A.M.C.

Dr. RIDLEY MANNING WEBSTER died on August 30th at Ealing, where he had resided since 1901. He was born in London in 1847, entered the Middlesex Hospital as a dental student in 1868, and duly qualified as L.D.S.Eng. Relinquishing dentistry, he took up medicine in 1874, and obtained the diplomas of M.R.C.S.Eng. and L.S.A., and later L.R.C.P.Edin. In 1881 he held two resident appointments at the Middlesex Hospital, under the late Drs. Cayley and Hall-Davis, and then settled at Muswell Hill, where he established a large practice and gained a high reputation as a medical practitioner. In 1884, under the stress of professional work, he contracted pleuropneumonia, from which he never really recovered, for it left him with the remains of an empyema, and a recent perforation of a crippled lung led to septic bronchitis. In 1900 he had the misfortune to fracture a patella, and as some disability following a delayed recovery he relinquished practice. A colleague, H. A. S., writes: Dr. Webster was a many-sided man, for beyond his professional gifts he was a naturalist, a skilled mechanic, an antiquary, and an authority on church architecture. A Cartesian in search of truth, though silent as to nature's mysteries, in his broad outlook he was a humanitarian, altruistic, humble, and self-denying. He did good work for the St. John Ambulance Association, and he was a member of the British Medical Association and of the North London Medical Society. He never married.

Dr. ALAN EVERLEY TAYLOR, surgeon of the s.s. *City of Calcutta*, died of heart failure after heat-stroke, at sea, towards the end of August. He was the son of Dr. Everley Taylor, of Langholm, Dumfriesshire, late of Scarborough, and was educated at Oxford, where he graduated as M.A., M.B., and B.Ch. in 1910, and at the Universities of Göttingen and Leeds. After graduating he filled the posts successively of house-surgeon, house-physician, and resident ophthalmic officer of Leeds General Infirmary. He took a temporary commission as lieutenant in the R.A.M.C. on December 28th, 1914, was promoted to captain after a year's service, and served as officer in charge of Ophthalmic Centre No. 82.

Universities and Colleges.

ROYAL COLLEGE OF PHYSICIANS OF EDINBURGH.

Parkin Prize.

IN terms of the bequest made to the College by the late Dr. John Parkin, a prize of the value of £100, and open to competitors of all nations, is offered for the best essay, "On the curative effects of carbonic acid gas or other forms of carbon in cholera, for different forms of fever and other diseases." Essays (written in English) must be received by the secretary not later than December 31st, 1923. Each must bear a motto, and be accompanied by a sealed envelope bearing the same motto outside, and the author's name inside. The successful candidate must publish his essay at his own expense, and present a printed copy of it to the College within three months after adjudication.

CONJOINT BOARD IN IRELAND.

THE following have been approved at the examination indicated:

FINAL PROFESSIONAL.—Jane A. Brennon, F. S. Bourke, H. Bugler, P. J. Clarke, S. L. Christie, S. B. Carlisle, Dorothy M. Coulson, S. H. Ervin, F. B. Harrison, P. Kilcoyne, P. S. McCabe, P. J. C. MacDonnell, Iris P. Nelis, Mary R. Nolan, T. V. C. Nolan, D. M. F. O'Connor, J. F. O'Connor, Anne O'Connor, A. T. O'Grady, C. B. D. O'Henaghan, Helen P. Regan, Mary A. Ryan, J. D. Sayers, R. E. Sadlier, S. L. Simon.

SOCIETY OF APOTHECARIES OF LONDON.

THE following candidates have passed in the subjects indicated:

SURGERY.—E. N. C. Annis, E. E. E. Attale, A. Cawadias, H. S. Chadwick, H. T. Chiswell, C. J. Fox, K. P. Hare, G. A. Lord, H. Maclachlan, M. A. E. Somers, J. N. Wheatley.

MEDICINE.—E. E. E. Attale, A. Cawadias, J. H. Cooper, J. B. Couche, J. Crawford, C. J. Fox, K. P. Hare, *M. S. Mahmud, W. R. H. Pooler.

FORENSIC MEDICINE.—E. E. E. Attale, A. Campbell, A. Cawadias, K. P. Hare.

MIDWIFERY.—E. E. E. Attale, E. N. C. Annis, A. Cawadias, H. S. Chadwick, R. S. Chambers, K. P. Hare, G. A. Lord, Y. Nadan Lal, H. J. Powell, J. N. Wheatley.

*Section II.

The diploma of the Society has been granted to Messrs. E. E. E. Attale, A. Cawadias, H. S. Chadwick, and K. P. Hare.

Medical News.

THE annual dinner of the past and present students of St. Mary's Hospital Medical School will take place at the Connaught Rooms, Great Queen Street, W.C., on Monday, October 1st, 1923, at 7 for 7.30. Mr. V. Warren Low, C.B., F.R.C.S., will be in the chair. The honorary secretary is Dr. Hope Gosse.

THE Governors of St. Bartholomew's Hospital have appointed Sir Robert Armstrong-Jones, C.B.E., M.D., to be consulting physician to the department of psychological medicine.

A SERIES of lectures and demonstrations will be delivered at the Royal Sanitary Institute during the coming autumn. A course for sanitary officers will commence on Tuesday, September 25th, comprising the subjects scheduled for the examination of the Institute and the Sanitary Inspectors' Examination Board; inspections and demonstrations have been arranged in connexion with this course, including visits to public and private works illustrative of sanitary practice and administration, with demonstration of the routine of an inspector's office work and duties. A course for meat and food inspectors begins on October 5th; the course consists of

systematic practical training in the inspection of meat at a cattle market. A course for health visitors and child welfare workers begins on October 1st; the course of lectures is arranged as a preparation of the health visitors' examination of the Royal Sanitary Institute, and is not part of the scheme prepared by the Board of Education; the course is open to all students who wish to attend, but only those who hold the nursing and midwifery qualifications set out in the regulations can be admitted to the examination. An introductory lecture to the students of the various courses will be given at the institute by Professor H. R. Kenwood, C.M.G., on September 24th, at 5.30 p.m.; admission is free. Particulars may be obtained from the secretary of the Royal Sanitary Institute, 90, Buckingham Palace Road, London, S.W.1.

THE Medical Branch of the Board of Education has been transferred from Nos. 5 and 6, Clement's Inn, Strand, W.C.2, to 54, Victoria Street, S.W.1. (Telegraphic address: "Meducation Sowest, London.")

THE annual general meeting of the Medical Sickness, Annuity, and Life Assurance Society will be held at the offices of the company, Lincoln House, 300, High Holborn, W.C.1, on Monday, October 1st, at 4 p.m.

A COURSE of elementary lectures on infant care, for infant welfare workers and others, will be given by Dr. J. S. Fairbairn and Lady Barrett, M.D., in the Lecture Hall of the National Association for the Prevention of Infant Mortality and for the Welfare of Infancy, Carnegie House, 117, Piccadilly, W.1, on Mondays, at 6 p.m., from October 1st to December 3rd.

THE Scottish Board of Health (121*a*, Princes Street, Edinburgh) announces the opening of its *Register of Health Visitors*. Persons discharging on behalf of a local authority all or any of the duties of a health visitor under a scheme of maternity service and child welfare or of tuberculosis or otherwise, or of a school nurse under a scheme of school health administration, may apply for certification and registration.

A NATIONAL gas exhibition, demonstrating the service of gas in the home and industry, will be held at the Bingley Hall, Birmingham, from September 17th to October 3rd.

AT the International Congress against Alcoholism held at Copenhagen from August 19th to 24th it was decided to appoint a small committee to draw up a scheme for an International Federation of Medical Abstainers. The members of the committee were Dr. Holitscher (Czecho-Slovakia), the convener of the meeting, Dr. C. F. Harford (England), Dr. M. Legrain (France), Dr. Kh. Neytcheff (Bulgaria), and Professor R. Vogt (Norway). A constitution was agreed upon which is to be submitted to the existing societies of medical abstainers in different lands. The object of the Federation is to unite these societies: (1) to promote total abstinence in the medical profession; (2) to study alcohol and alcoholism; and (3) to organize the scientific attack on alcoholism. It is proposed that the Federation shall hold its chief meetings on the occasion of the International Congress against Alcoholism, but would meet also at international medical congresses.

A PRACTICAL post-graduate course in gynaecology will be held at the Hôpital Broca, Paris, from September 17th to 29th. The fee is 150 francs.

AN amendment has been made to the law controlling medical practice in Ontario, which has closed the door against osteopaths, chiropractors, and other "drugless healers," unless they hold the qualifications which the Medical Council requires of medical practitioners.

A VACATION course will be held at the Hôtel-Dieu, Paris, from September 10th to 21st, on recent medico-chirurgical work on alimentary diseases.

PROFESSOR UHTHOFF, the well known ophthalmologist, who recently resigned the chair of ophthalmology at Breslau owing to his reaching the age limit, celebrated his 70th birthday on July 31st.

DR. SEBASTIAN RECASENS, the well known gynaecologist, and dean of the Madrid Faculty of Medicine, has left Spain to visit the universities of South America, where he will lecture on gynaecology.

THE late Dr. Flora Murray, who died on July 28th, left estate of the gross value of £3,941, with net personalty £3,335. She left all her property to Dr. Louisa Garrett Anderson, desiring her to dispose thereof as she may think best, retaining for her personal use all or any part of it as she might wish.

DR. ALEXANDER MARMOREK, the well known bacteriologist, died recently in Paris at the age of 58.

THE German Pediatric Society will hold its annual meeting at Göttingen on September 21st and 22nd, when a discussion will be held on endocrine glands, in which Drs. Schiff of Berlin, Birk of Tübingen, Thomas of Cologne, and Goett of Munich will take part.

A PRESENTATION of books and instruments was recently made to Dr. Charles J. Gordon Taylor by the medical men of Nuneaton on his leaving that town to take up practice at Bridlington.

ACCORDING to a statement received from the information department of the Russian Trade Delegation in London, typhus reached its maximum in Russia in 1920. The number of cases in 1918 is said to have been 130,164; in 1919 there were 2,119,549, and in 1920 there were 3,354,056 cases. The People's Commissariat for Health then organized special commissions to combat the spread of typhus, and summoned seven all-Russian congresses of bacteriologists and epidemiologists. "Workers' commissions for cleanliness" were set up and 250,000 isolation beds were organized. In the following year (1921) 633,250 cases were registered. The famine of that year, however, again assisted the development of the epidemic, and in 1922 1,401,145 cases were registered. It was only possible to localize the epidemic at the end of 1922, but by the beginning of the present year only rare individual cases were being registered throughout Russia. The statement adds that during the same years (1918–22) there was a great epidemic of relapsing fever.

DETAILED information is as yet incomplete regarding the fate of British residents in Tokyo and Yokohama during the disastrous earthquake of September 1st and 2nd. It is reported that although the British Embassy building was wrecked there was no loss of life among the staffs of any of the embassies and legations; it is hoped, therefore, that Dr. H. Crichton Starkey, O.B.E., of the British Embassy, is safe. A message from Karuizawa, in the *Times* of September 6th, reports Dr. Anne Borrow as safe; but we regret to state that Dr. Edwin Wheeler, who practised for many years in Yokohama, is reported killed. Dr. Wheeler was one of the oldest British residents in Japan; he graduated M.D. of the Queen's University of Ireland in 1864, and had been a member of the British Medical Association for the past thirty-three years.

Letters, Notes, and Answers.

ORIGINAL ARTICLES and LETTERS *forwarded for publication are understood to be offered to the* BRITISH MEDICAL JOURNAL *alone unless the contrary be stated.*

CORRESPONDENTS who wish notice to be taken of their communications should authenticate them with their names—of course not necessarily for publication.

As, owing to printing difficulties, the JOURNAL *must be sent to press earlier than hitherto, it is essential that communications intended for the current issue should be received by the first post on Tuesday, and lengthy documents on Monday.*

AUTHORS desiring reprints of their articles published in the BRITISH MEDICAL JOURNAL are requested to communicate with the Office, 429, Strand, W.C.2, on receipt of proof.

IN order to avoid delay, it is particularly requested that ALL letters on the editorial business of the JOURNAL be addressed to the Editor at the Office of the JOURNAL.

THE postal address of the BRITISH MEDICAL ASSOCIATION and BRITISH MEDICAL JOURNAL is 429, Strand, London, W.C.2. The telegraphic addresses are:

1. EDITOR of the BRITISH MEDICAL JOURNAL, *Aitiology, Westrand, London;* telephone, 2630, Gerrard.
2. FINANCIAL SECRETARY AND BUSINESS MANAGER (Advertisements, etc.), *Articulate, Westrand, London;* telephone, 2630, Gerrard.
3. MEDICAL SECRETARY, *Mediocra, Westrand, London;* telephone, 2630, Gerrard. The address of the Irish Office of the British Medical Association is 16, South Frederick Street, Dublin (telegrams: *Bacillus, Dublin;* telephone, 4737, Dublin), and of the Scottish Office, 6, Rutland Square, Edinburgh (telegrams: *Associate, Edinburgh;* telephone, 4361, Central).

QUERIES AND ANSWERS.

TREATMENT OF COELIAC DISEASE.

DR. S. A. MONTGOMERY (Cleethorpes) asks for suggestions for treatment in a case of coeliac disease with stunted growth in a young girl who is passing three or four pale, evil-smelling, semi-liquid stools in twenty-four hours. Abdomen swollen and tympanitic; not much elevation of temperature or severe pain; no signs of glandular swelling in abdomen or omental thickening.

VARICOSE VEINS.

"M. J." writes: I have for many years suffered from varicose veins below the knee. The vein over the dorsum of foot is considerably swollen. There is considerable aching and discomfort, and undue fatigue is experienced on comparatively slight exertion. Two operations have been performed, sections of superficial veins having been removed. Elastic stocking gives only partial relief. Is there any appliance that can be used or can any means of lessening the discomfort and sense of weight in the limb be adopted? For suggestions I should be grateful.

INCOME TAX.

"R. H. A." inquires on what basis receipts should be calculated for the first years of a new—not purchased—practice, and what expenses are allowable.

*** *Basis of receipts:* For the first six months to April, 1923, the cash receipts *plus* the value of the debts outstanding at April 5th, 1923; for the year to April 5th, 1924, the cash receipts, less the value of debts at April 5th, 1923, *plus* the value at April 5th, 1924, and so on. *Expenses:* The whole of expenses incurred solely in carrying on the practice—for example, cost of drugs, expenses of locomotion, also a reasonable proportion of those general expenses which are incurred partly for private and partly for professional purposes—for example, rent and rates, domestic service, telephone. It should, however, be remembered that initial outlay or expenditure on improvement of the equipment is not allowable—for example, legal expenses in purchase or leasing of premises, purchase of car, instruments, etc.

"A. H. L. T." bought a 10-h.p. Singer car in 1920 for £490, and sold it for £220 in April, 1922, buying a 10 to 15-h.p. Fiat for £575; the price of a 10-h.p. Singer was then £340.

*** The amount to be taken as the cost of replacement is £490 less £220 = £270.

LETTERS NOTES, ETC.

"BROWN HEART" IN APPLES: A CORRECTION.

WE regret that by a typist's error in our note on the report of the Food Investigation Board dealing with brown heart of apples (August 25th, p. 335) carbon *monoxide* appeared several times instead of carbon *dioxide*. The reference throughout should, of course, have been to carbon dioxide.

WHOOPING-COUGH AND PREGNANCY.

DR. J. H. MORRIS JONES (Colwyn Bay) writes: The following case occurring in my practice might be of interest: On July 1st the eldest child of Mrs. Z. developed rather a severe attack of whooping-cough, and on July 15th the younger baby—18 months old—began with the paroxysms. Mrs. Z. was pregnant, the confinement being expected on August 15th. She strongly objected to having a nurse and insisted on taking charge of the two children. On the evening of August 9th Mrs. Z. was removed to a nursing home, where under scopolamine-morphine narcosis she was delivered of a normal child. On the following night the sister of the nursing home rang up to say that the baby had a severe paroxysmal cough, with a distinct whoop, and was vomiting. This diagnosis of pertussis I confirmed on seeing the child. The mother had had pertussis in infancy, but had had no cough of any sort latterly.

SEA-SICKNESS.

DR. A. P. THOMSON, M.C. (Birmingham), writes: Remedies for sea-sickness are few, and with a view to obtaining a further trial of this combination of drugs I should like to record the fact that three ladies, all of them notoriously bad sailors, were enabled to withstand the rigours of a very stormy crossing from Ostend to Dover without inconvenience by taking three successive doses of luminal grain j, potassium bromide grains x, at hourly intervals just before going on board. Ordinary meals were taken beforehand and sandwiches were eaten during the voyage. The element of suggestion may, I think, be excluded; for one of the ladies was my wife, who had previously tried many other remedies without success and who, in common with the wives of other physicians, evinces a curious scepticism of the value of the remedies prescribed by her husband.

MEDICAL ACCOUNT KEEPING.

DR. W. W. HARDWICKE (Chelsea) writes: It is generally recognized that members of the profession are not enamoured with account keeping. May I suggest to them an easy method, which I have adopted for some time, and found both simple and time-saving, the necessary arithmetic being reduced to the simple form, the compound form being entirely eliminated? By reason of the fact that fractions of sixpence are never used by the profession, it becomes a very easy matter to decimalize by using the shilling as unit, and treating the sixpence as a half-shilling or five-tenths. Thus, such amounts as 21s., 10s. 6d., 7s. 6d., 5s., 3s. 6d., and 2s. 6d. become 8.21.00, 10.50, 7.50, 5.00, 3.50, and 2.50. The ordinary cash columns can be used for the purpose, two only being necessary, the pound column for the integer in shillings, and the shilling column for the fraction. All figures to the left of the first figure of the integer naturally represent half-sovereigns. Coins of this denomination having no name, I have adopted for personal convenience the old one of "royal," familiar in Tudor days for this denomination. Pounds not being in the decimal series do not show themselves, but can be seen at a glance if required, by mentally or otherwise halving the "royals"; thus: 125.50 = £6 5s. 6d. This decimal method has the additional advantage of privacy, for no inquisitive stranger would understand the figures should the cash book by chance be left lying about. It may be noted that there is nothing in the Coinage or any other Act to render illegal the keeping or even rendering of an account in any denomination we choose, provided it is intelligible.

THE LEBANON HOSPITAL, BEYROUT.

THE Lebanon Hospital for Mental Diseases has issued its report (the twenty-fourth) for the year ending March 31st, 1923. It is situated at Beyrout, Syria, and receives mental cases from Syria and Palestine, independently of race, religion, or financial status. During the year 181 patients were admitted—132 men and 49 women—mostly cases of recent mental disorder, and good work is being done. In equipment, the greatest improvement in the year has been the installation of a new electric lighting and power plant. Also much renovation has been done and a clinical laboratory installed, but the institution needs a new water supply, laundry, and *x*-ray plant. It is maintained by patients' payments and by subscriptions and donations from Britain, America, Switzerland, and Holland. Also the French authorities in Beyrout now contribute to the maintenance of patients sent in by them. For training purposes the hospital is linked up with the American University in Beyrout. The office of the hospital is at 35, Queen Victoria Street, E.C.4, and the secretary is Miss A. M. Gooch. At Beyrout there is an executive committee which in the report is thanked for its never-failing co-operation and the admirable manner in which it has carried on the hospital in the face of extreme difficulty not unmixed with peril.

FACTORY GIRLS' COUNTRY HOLIDAY FUND.

WE have received a letter, signed by the Bishop of London and others, appealing on behalf of the Factory Girls' Country Holiday Fund. They write: "Our funds are exhausted, but we have many girls and women anxiously hoping for at least a week's rest at the seaside before the winter. The need for this little rest and change is probably more urgent than ever before. Trade depression has resulted in the girls being the main support of thousands of families, who but for their earnings would be on the verge of starvation. The general standard of comfort in the average home is lower than it has been for many years, and the health of the community in the crowded and airless factory districts of London has deteriorated considerably. Nor has it been possible for the girls to contribute as much towards a holiday as they have done in former years. Good food, rest, and fresh air for a short time will make it possible for many to continue their work through the winter who would otherwise break down under the strain and privation they have had to bear for so many months. The short holiday will give them fresh hope and courage." Contributions will be acknowledged by Miss Canney, 75, Lamb's Conduit Street, W.C.1.

SYPHILITIC HEADACHE.

DR. H. LECHMERE CLIFT (Emmanuel Medical Mission, Nanning, South China) writes: In the BRITISH MEDICAL JOURNAL of May 12th (p. 840) Dr. Reginald Cock describes a pathetic case of lifelong headache, found after death to be due to congenital syphilitic lesions. It reminds me of an experience of mine in France, when on the staff of the Chinese Base Hospital at Nozelles. At one time I was given charge of a ward full of chronic cases—these included a man with pyorrhoea, which had resisted emetine and other remedies; a case of failing vision which the eye specialist had seen and not diagnosed; and, most tragic of all, a poor fellow, with a wild look in his eyes, who screamed day and night with headache. As a matter of routine, I put all three on iodides, and in a very short time all the three cases cleared up.

WE have received a specimen copy of Pettitt's Folio Diary No. 18c, published by Straker and Crane's Diary Co., 205, City Road, E.C.1. This provides one foolscap page to each day, including Sundays, and is printed for half-hourly professional appointments between 9 a.m. and 6 p.m. The diary is supplied bound in whole cloth at 17s. 6d. net, or interleaved with blotting paper at 18s. 6d. net.

VACANCIES.

NOTIFICATIONS of offices vacant in universities, medical colleges, and of vacant resident and other appointments at hospitals, will be found at pages 31, 34, and 35 of our advertisement columns, and advertisements as to partnerships, assistantships, and locumtenencies at pages 32 and 33.

A short summary of vacant posts notified in the advertisement columns appears in the *Supplement* at page *120*.

SCALE OF CHARGES FOR ADVERTISEMENTS IN THE BRITISH MEDICAL JOURNAL.

	£	s.	d.
Six lines and under	0	9	0
Each additional line	0	1	6
Whole single column (three columns to page) ...	7	10	0
Half single column	3	15	0
Half page	10	0	0
Whole page	20	0	0

An average line contains six words.

All remittances by Post Office Orders must be made payable to the British Medical Association at the General Post Office, London. No responsibility will be accepted for any such remittance not so safeguarded.

Advertisements should be delivered, addressed to the Manager, 429, Strand, London, W.C.2, not later than the first post on Tuesday morning preceding publication, and, if not paid for at the time, should be accompanied by a reference.

NOTE.—It is against the rules of the Post Office to receive *poste restante* letters addressed either in initials or numbers.